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Contributions.

"TIME FOR THE CONTINENT."

Judging from the amount of comment which the article in the first number of the RAILROAD GAZETTE has elicited I infer that the inconvenience resulting from the existing varying standard of time was not exaggerated but rather underestimated therein.

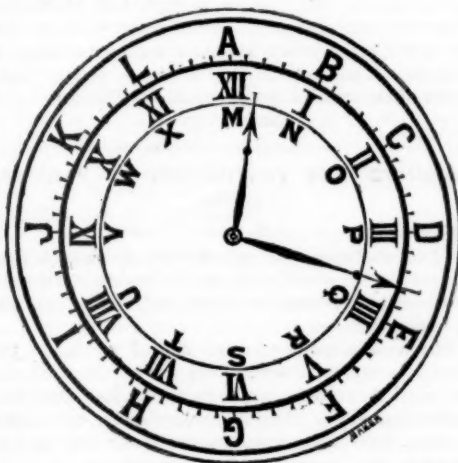
The writer remembers seeing in the railroad depot at Toledo, Ohio, three clocks, marked respectively, Cleveland, Toledo and Chicago time, and each of course indicating a different hour. The difference between them I do not now remember, but if these clocks had tongues as well as faces and hands, no doubt they could tell some odd stories of perplexities and mistakes, caused by their disagreement. The fact that in cases of doubt there is usually but one true solution or answer, and from one to a thousand or more equal chances of error, will, without the doctrine of the depravity of human nature, always account for the liability of mankind to make mistakes.

Now to see how perplexing a three-fold time must be let us in the case of these three clocks analyze the mental process by which a perplexed traveler must gather the necessary information to direct him when, where, and how to go from Toledo. In the first place, he must know to what place he intends going—an element in the inquiry by no means always absolutely determined—second, *which route* must he take; third, *which train* will take him to his destination; fourth, when will it leave; fifth, "what time does the road run on;" sixth, *which clock* indicates the time; seventh, *what time* by the right clock is it when the inquiry is being made; eighth, *where is the train*; ninth, *which* is the car for him to take. Consider, too, that the inquiry is usually made in a state of mind, not by any means as calm as that in which you, reader, are looking over these lines, but in a greater or less state of excitement caused by the arrival or departure of trains and passengers, the ringing of engine bells, and the sounding of gongs—causes which are often very exciting or confusing to persons who are either timid or unaccustomed to travel, or both, and besides are frequently deprived by fatigue or home-sickness, or some of the numberless causes of depression to which poor, sad, weary human hearts are so prone. Of course I do not mean to say that all the perplexities of our confused traveler would be arranged and answered, by an absolute standard of time, but I do say if there were but one, his perplexity would be much less than at present. This is not the only kind of confusion caused by variable time. The difficulty of arranging time tables to make satisfactory connections with roads running by a different time is very great, and the most experienced travelers are now liable to make mistakes from railroad guides.

The time which should be fixed upon as the standard is of course an open question. The fact, however, that the time tables of the roads which centre in New York govern the running of the trains on nearly all the roads from Maine to Texas and California seems, in addition to the fact that New York is the great metropolis of the country, strong reason for adopting its time as the standard.

If, however, some absolute time were determined upon, there would still, without some additional changes, be two fertile sources of ambiguity and error left. If the railroads were to adopt some system, the balance of the

community would, at least for some considerable time, adhere to their present standard. In order to be explicit, it would therefore always be necessary to state whether the time named was railroad or local time. Besides this, there is at present a cause of ambiguity from the fact that the twenty-four hours are designated by only twelve numbers, so that any hour, say two o'clock, may mean either day or night. If, now, some other nomenclature were adopted for the standard time, with a different sign for each hour, it would at once indicate which time was meant, and also whether the time named was day or night. With this object in view, it has been suggested that the hours should be lettered as shown in the cut, beginning with A for 12 o'clock midnight, and lettering consecutively for the whole twenty-four. By this system 1:30 a. m. would be B:30; 1:30 p. m. would be N:30; 10:15 p. m., W:15, etc., etc.



This change need not interfere at all with the existing standards of local time, and if it were adopted we would all eventually get new faces to our clocks and watches lettered similar to the cut, and then set the hands to whichever time would be most convenient to us.

If some absolute standard, say New York, was fixed upon, and the hours lettered as we have suggested, when we were told that a train left at M:45, we would at once know it was railroad time, and 45 minutes past 12 o'clock noon, instead of being in doubt whether local time was meant, or whether it was 45 minutes past 12 at midnight or noon. I confess it is to me often a little confusing, although I am more or less accustomed to studying time-tables, to know whether 12:45 a. m. means night or daytime. A little reflection, of course, sets me right; but no ambiguity could result if the system described were employed.

The plan proposed is more of the nature of a suggestion than the result of mature consideration, and I give it in order to call forth discussion, and will be glad to hear from any person interested in the subject.

X. SENTRICK.

HINTS ON TRACKLAYING.

BY WM. S. HUNTINGTON.

Tracklayers using the four-bolted fish joint neglect to make any provision for expansion, as that is supposed to have been attended to at the rolling-mill, by making the bolt-hole elongated both in the rail and fish-bar. It is unsafe to rely wholly on this, as the holes in the fish-bars and rails are so placed in relation to each other as to allow the rails to come in contact with each other, unless prevented by placing a shim between them; and the iron chair should always be provided with a shim-box on each side for that purpose. The boxes should be divided into various compartments to hold shims of various thicknesses, not only to be used at different seasons of the year, but at different times of the day, using the thicker ones in the morning when it is cool, and at the close of the day, and thinner ones in the heat of the day. It is a good plan to take hoop or band iron one inch or 1½ inches wide and of various thicknesses, and cut

it into lengths of about three inches; bend the pieces in the middle at right-angles, so that they will form two sides of a square; select the proper thickness, and use them by placing one end between the rails and the other on the top of one rail at the joint. After the joint has been bolted and spiked, the shims can be easily removed for future use. This is a very important matter, and should receive more attention than is generally the case.

Trouble is sometimes experienced on roads when it would seem that ample provision had been made for expansion. This is sometimes caused by sand, gravel, particles of iron, etc., working into the space between the rails at the joint, where the chair prevents its working out. There is no remedy for this except to exercise care in ballasting and to clean out the joints as well as possible after dressing off the track. Another cause is the bolting of the fish-bars so tight as to prevent the slip of the rail, causing it to buckle, which throws it out of line. This is the most serious, and, perhaps, the only objection to the fish-bar joint.

"Suspension joints" have been used considerably on some roads and thus far have given good satisfaction. With these joints no chair is used, and the joint is made by placing two broad-faced ties near together, each tie being near the end of the rail, leaving about three inches, or perhaps more, of the ends of each rail with no support except the fish-bars. This leaves the joint suspended between two ties six or eight inches apart, and all sand, gravel etc. is allowed to fall through, leaving the joint always free.

Much damage has been done (caused by expansion) from improper treatment of "creeping track." The creeping of track occurs more frequently on roads with heavy traffic and where grades are heavy and change frequently. The rails in creeping have a tendency to move toward the foot of the grade, the ends of all the rails on the incline being in contact; while at the summit there is an open space of several inches. This space is sometimes filled with a hard-wood plug or block driven in tightly to prevent its working out. On some roads a "plug-chair" is used in place of the block. These chairs are of the ordinary form of cast-chairs, with a tongue in the middle of the rail-seat, the tongue being in the form of a cross-section of the rail. The tongue or plug is cast with the chair, and chairs are cast having the plug of various thicknesses, varying from one to three or four inches, to fill a space of any width, as required. Of course these chairs prevent the brooming of iron at the open spaces, and are also a great relief to rolling stock; but they prevent expansion, and their use should be abandoned. Fish-bars prevent creeping in a great measure, but there are thousands of miles of road in the country still using the old style of chairs, and the railway community is greatly in need of some effective contrivance for keeping rails in their places longitudinally. The inventor who will produce it will, no doubt, be well rewarded.

Perhaps it would be extravagant to say that the throwing of track out of line for want of room for expansion has been as fruitful a source of railway disaster as any other in the list of causes, but it is safe to say that it ranks next to collisions and misplaced switches as a cause of accident. An accident occasioned by this is always a serious one, resulting in a general smash-up, with the loss of more or less lives, and railway managers throughout the country will find this matter worthy of their serious consideration, when their attention has once been called to it and they become alive to its importance.

DRIVING SPIKES

is an operation which is usually performed in a slovenly manner, and a great deal of money is wasted in the operation. Kegs of spikes are thrown from the car into ditches, culverts, cattle-guards, etc., the kegs are broken open and a portion of their contents are lost in the mud or covered with gravel, and they are never seen again, unless accidentally they are dug up years afterwards by repair men. If a little more care was exercised in this respect it would be well, and not only with spikes, for bolts, nuts, washers, chains, fish-bars, etc., frequently share the same fate. But it is the driving of spikes that

greatly needs improving, and it may be done, greatly to the advantage of all concerned.

Spiking, like all work connected with tracklaying, is usually done with a *rush*, and consequently poorly done. The spikes are often driven under the rail; that is, they are set leaning, so that the point either goes with a *slant*, under the rail, or in the other direction, from it. It is wrong in either case, as the spike can never be drawn for track repairs without bending it so as to render it unfit for future use; for an attempt to straighten it will break it. Spikes should be driven as nearly perpendicular as possible. Tall spikers usually set the spike leaning from them; probably for convenience of driving. The practice is a bad one, as it brings the head of the spike down on the rail edgewise, which weakens it; and moreover the spike is in a worse position for drawing than when driven in either direction above mentioned. In drawing a spike driven in the last mentioned position, i. e., with the top leaning from the spiker, the head is almost sure break off, or, if it does not, it will be bent to one side, so as to render it entirely worthless. For proof of this, notice the kegs and barrels full of bent and broken spikes, and the loose piles of the same article around every car-house, shop, or depot, or in the scrap-heap, to say nothing of the great numbers of them that are lost in the gravel. Most of these spikes might have been used again if they had been properly driven. Thousands of tons of spikes are destroyed in this way, and they represent an enormous sum of money.

Spiking joints is often carelessly done, and with some kinds of chairs now in use much care is necessary to secure a true joint, so as not to subject the ends of the rails to pounding and battering, soon rendering them unfit for use.

Many heads are broken off the spikes when driving them in a hurry by striking the last blow too heavy. When the spike is nearly driven home, a light blow should be given, so as just to bring the head to the rail without cracking or straining it. In frosty weather bushels of spike-heads may be picked up on some roads, which are needlessly broken by carelessness in striking. In spiking the gauge side, care should be taken to place the gauge at right-angles with the rail. It is not uncommon to find track to vary in width from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch, and sometimes even more. One cause of this variation is the spiker not placing the gauge properly. On straight lines it is not difficult to get a true gauge if ordinary pains are taken, but on curves and frogs, etc., it requires considerable care to place the gauge properly, as the eye is liable to be misled by surrounding objects; but the greatest difficulty in this respect is generally encountered on curves, by reason of the inner rail "running ahead," as before mentioned. Spikers are in the habit of placing the gauge at the joint on both sides of the track, and when one joint is fifteen or twenty inches in advance of the opposite side (or perhaps two feet, as is often the case), it has the effect to alter the width of the track very much. This variation in the width of track is a serious evil, which may in a great measure be remedied by proper care in spiking the gauge side. There are other causes of the evil above mentioned, which, all combined have the effect to make this variation far greater than is generally supposed. The gauge is sprung by driving the outside spike under the rail, so as to draw the rail in; or perhaps the inner spike is started first, which draws the rail out a trifle too much; and, after the spikes are once driven, it is left as it is right or wrong, not being considered of any importance, as it is but a trifle too wide or narrow, as the case may be. The oscillation of railway carriages, is, in a measure, due to variation in gauge. The question "why do railway carriages oscillate?" has lately been discussed in the scientific and mechanical papers and has been ascribed by some who have given the matter considerable attention to the bevel of car-wheels. There is no doubt but that conical wheels are, to a certain extent, the cause of oscillation; but there is really nothing very disagreeable in the oscillation of cars when running on a track in good line and with a true and uniform gauge. In the discussion above alluded to, the oscillation of railway carriages is described as something extremely disagreeable, and, with a good deal of truth. There are, however, a few roads in this country, where carriages are comparatively free from this nuisance. It is customary to allow one inch for play between the flange of the wheel and the rail. This is necessary, for obvious reasons, and with this inch for play, it is impossible to entirely prevent oscillation to a certain extent. There is, however, nothing particularly damaging from this cause to track or rolling stock, when track is laid to a true gauge, as a gentle, regular, swinging motion of a passenger coach produces a very agreeable sensation to passengers; but it is the sudden yanking and twitching from side to side that nervous people so dislike, and which tends to the rapid wear of track and rolling stock, and is not unfrequently the cause of accidents.

As the rail is a guide to the wheels, the line side may be in perfect condition; if the gauge side varies, it will be seen to present a snaky appearance, full of kinks, and the flange of the wheel is as likely to follow the gauge side as the other, which is the cause of the disagreeable oscillation. If track is $\frac{1}{2}$ or $\frac{3}{4}$ of an inch too wide, then of course the tracks have an excessive side motion, which produces what is called "gauge concussion." Another cause of gauge concussion and oscillation may be found in the surface of track, even when the gauge is tolerably correct. It is a fact not generally known, that a locomotive or car wheel will generally follow the highest rail on straight line, when one side of the track has settled more than the other, for instance, if a rail or the length of several rails on the right side of the track has settled so as to be lower than that on the left, the flange on the wheel will follow the left side; then suppose this condition of the track to be reversed for a few lengths of iron, the flange will follow the right rail, and so on, continually changing from side to side, causing both oscillation and gauge concussion. These difficulties are not so serious on curves as on straight line, unless the track is out of line, and in that case they are far more disagreeable on curves.

There is but little track in this country with straight line perfectly level, for various reasons above mentioned, viz: improperly selected sleepers, improper manner of laying them, etc., etc. The track settling out of surface, the incline of the ties (the cross section of the track) continually changing from side to side, and trains passing over such track at high velocities, the flanges of wheels striving (so to speak) to follow the higher rails, are, in consequence, subjected to sudden and powerful lateral motion. This motion, on well laid track, and track kept in good repair, is not productive of any serious evils; but there is a wide field for improvement in this respect, and some of our roads have already found proof of the truth of this by actual experiment.

TO BE CONTINUED.

WARMING AND VENTILATION OF RAILROAD CARS.

TO THE EDITOR OF THE RAILROAD GAZETTE:

"I am glad to see you agitating this the most important subject connected with travel—important because it is essential to the comfort, health, and, may be, the *lives* even of passengers.

The accomplishment of the desired result, as you truthfully say, is difficult, from the peculiar nature of the case. A railroad car contains far less space for a person than any ordinary living apartment; consequently each pair of lungs has proportionally less space to breathe in or air to breathe than is customary.

An ordinary-sized passenger car, 48x8x8—3,072 cubic feet of space, seating say fifty passengers, gives each one sixty-one cubic feet of air to breathe, which, according to the physiological law that an ordinary pair of lungs consume the vital portions of seven cubic feet of atmosphere per minute, would last scarcely ten minutes—in ten minutes would be breathed up and unfitted for re-inhaling.

A room of the same air space, 14x18x12, not being occupied ordinarily by more than four persons, would give to each of this number 756, instead of 61, cubic feet of air to breathe.

It is not possible—or at least not practicable—to warm a car by the introduction of fresh air. The upper portion of the space may be so warmed, but not the *lower*—the only space really requiring artificial warmth.

All arrangements by which *air* is the agent for communicating warmth to the passengers demand something to give *motion* to this air, first to compel its contact with the stove, furnace, or whatever source of heat, and second to distribute the air when warmed to the persons of the passengers. Machinery—a steam engine and blower, for instance *might* be employed for propelling this air; but the motion of the car itself is the only practicable power for this purpose and has for the past twelve years been relied upon to force exterior air into cars both for ventilation and heating. For both these purposes, wind-catchers, wind-scoops, inducting and exhaust flues, water-vessels, air-washers, traps, spark-arresters, dust-sifters, etc., etc., for ventilation; and stoves, furnaces, etc., of almost every conceivable size, shape and pattern, for heating, have been resorted to and thoroughly tested on many Western roads, especially the Chicago, Burlington & Quincy, and the Michigan Central; but all attempts in this direction—particularly the heating part—have been productive of little else than failure. The difficulty was found to be in the means—or rather the want of the means—to maintain the warmed air at the lower space in the car. Of course no heat at all could be obtained, except in the immediate vicinity of the stove, unless the car was in motion. In any case, the rarified air, no matter at what

point it was discharged into the car, would fly directly to the top, and, with the ventilators open, escape into the open air and be lost. Closing the ventilators to keep the warm air in can be done only at the expense of ventilation; but it is generally done, because of the two alternatives passengers prefer warmth and foul air to air which is cold, though not always fresh.

In a stationary building, the smoke-stack or chimney, with its ample height and rarified condition, and its opening at the bottom, such as a fireplace, exhausts the colder air and drives the warmer down to the surface of the floor. There the under side of the floor is not submerged in cold air torrents, as is the case with the car. Of course the car can have no flue, or one only a few inches in length, and cold at that.

Exhausts, flues or other vents, at the floor to lead the warm air downwards, are successful to a very limited extent, and then only when the car is in motion, the wind propitious, and all other openings of the car tightly closed.

All these arrangements are entirely successful in heating the heads of the passengers; but the feet of the passenger (unless placed against the aperture from which the heated air flows) are never warmed, as the thermometer often shows the air at the floor at freezing point,—a current of air at that,—while the top of the interior of the car is at 70 or 80 degrees.

Another barrier to the "introduction of fresh air" for warming railroad cars is the uncertainty of the exterior air currents (as fresh air must be taken from the outside), both of the wind and the current produced by the motion of the car. A car, at full speed, makes a current equal to a fierce wind. Then add to this, in many cases, the force of a strong wind blowing dead ahead,—thermometer, say, at zero,—and what stove or furnace has heating power even to "take the chill off" of the cold air propelled into the car by the two combined forces. Or if the wind blow with the car, it may neutralize the current produced by the motion of the car, and thus prevent the propulsion of the air inwards, as much so as though the car were motionless. Old Boreas will not be controlled; he will blow ahead, behind, sideways, cornerwise and illwise, and at most times on the lines of railroads. So it will be seen that we cannot rely upon bringing fresh air from outdoors, (and where else can it be obtained?) warmed and distributed to warm the passengers. If its influx could be uniform and independent of the motion of the car and of the wind, it might be so adjusted as to warm the upper part of the car space, and, quite imperfectly, strata near the floor. But even this, for reasons shown, cannot be relied upon. At best the heat from stoves and furnaces in a railroad car is a burnt and bad quality, as much so as of any stove or hot-air furnace—the air from them, even were it possible to control it, at the best is of an unwholesome nature.

The only practicable system for warming a car seems to me to be by means of steam and hot water radiators, located in convenient proximity to the feet of the passengers. Let them be distributed so that the heat shall be uniform and not excessive at any one point. These, with the use of water, as adopted by Pullman, the Lake Shore and other railroads, are easily kept most comfortably warmed by a very small fire in some remote space, free from all danger, and thus a perpetual radiator or foot-warmer is furnished each passenger; and when he gets into the car with wet or cold feet he need not go to the stove, for the stove—or at least his proportion of the heat—is furnished him in his own seat. The feet and extremities of the person are warmed, and this is all the heat required. Now open the ventilators—fasten them open so they can never be closed—take off the roof of the car if you please, and every passenger will be happy with his head in pure air, even if it be cold. Ventilation is not wanted at the floor. It is only wanted at the head—at the openings to the lungs.

Prof. Silliman contrasting radiant with air-current heat says: "The difference is like being in the sunshine and in the shade. The cause is found in the total absence of all rays of heat from the heated atmosphere blowing through the registers of a hot-air furnace. An apartment warmed only by heated air blown through 'it is like a warm bath. In such an apartment the human body is hotter (98°) than any other source of heat there present, and is constantly cooling by its own radiation; while in presence of an open fire or of radiant heat from steam, the body receives direct rays of heat from a source hotter than itself. Hence, with radiant heat, a lower temperature in the surrounding air, is consistent with greater comfort."

Give us the ever present radiators at our feet, so we may be sure of warmth enough, warmth at all times, and warmth where it is wanted, and warmth of the right quality. Give us the top of the cars open, both sides as much so as the structure will admit without un-

roofing the car, so that the fresh out-door air may circulate freely in the region of the head, and we opine that there can be nothing better. E. T.

RAILROAD EXPANSION, INVESTMENT AND IN-COME.

Not a few persons seem to be puzzled over the fact that our great railroad corporations continue to swell their construction accounts with the proceeds of new issues of shares and bonds. A moment's reflection, however, ought to satisfy a thinking mind that, inasmuch as large portions even of our most populous States—to say nothing of newer ones—whose development requires the aid of iron tracks and steam trains are still destitute of railroad facilities, the work of expansion is likely to continue so long as new territory invites occupation and a wise foresight guards established routes against unnecessary competition.

The policy of our principal lines of railroad at the present day, which reaches out after connecting and auxiliary roads and operates them as branches, though always in one sense constituting them "overweening monopolies" as they are commonly denominated in some quarters, is, after all, but a far-sighted policy of self-protection. After trunk lines are opened they must construct, or by some means control, branches or feeders, in order that an enlarged area may be made tributary for traffic and income, not necessarily for the acquisition of greater power for corrupt purposes, but to secure a traffic that will be remunerative upon the capital invested. That it is a wise, comprehensive and even necessary policy is understood and appreciated by those who have millions of dollars invested in railroad shares and bonds. It ought also to be equally well understood by those whose investments are represented by thousands and hundreds.

One of the most prosperous of our American trunk lines, which is, perhaps, foremost in the expansion policy, with 358 miles of road, or about 700 miles of single track, earned by its last year's operations an aggregate income of \$17,250,812—over \$48,000 per mile of road or \$24,000 per mile of track. The line moved 4,922,025—nearly five million—tons of freight. Truly an immense traffic and a liberal increase over that of ten years ago, when it amounted to 1,170,240 tons. May not a good proportion of this remarkable increase be attributed to the fact that the company has during this time obtained control of and is now virtually operating 1,006 miles of other railways. Yet this income, magnificent as it appears, can net no more than a fair return to the stockholders. It is not anywhere claimed, we believe, that *cash dividends* are too large.

In Great Britain there are 14,223 miles of railway open for traffic on which has been expended for construction and equipment £491,000,000—in United States money a sum nearly equal to our whole public debt. During the year 1869, which was, indeed, one of unusual prosperity for them, the gross receipts of the various companies amounted to £40,000,000, equal to an average of £2,900 per mile. Deducting one-half for working expenses, and there is remaining upwards of £20,000,000 available in the form of profit—a gross return upon capital invested of nearly 8½ per cent., or a net dividend of 4½ per cent. This would not be considered a high rate of interest for such investments in this country, but in England it is almost unexampled. It is necessary, we are told, to go back to 1847 to find another year in which railway property made such a return, and then it was upon the comparatively small basis of only 4,000 miles of road open to traffic. The increase has been, of course, attributable to two causes: more money has been received, and less has been spent. The actual receipts of the companies in proportion to capital have been greater than in any other year since 1846, and the working expenses have been less than in any year since 1860. It is instructive to notice that one of the causes to which the increase of profit is attributed is that the companies have ceased to struggle against competition, and therefore have avoided the wasteful expenditures that they had heretofore made to prevent the building of new lines. Competition is no longer met by maintaining costly lobbies in Parliament to oppose the granting of charters to rival lines, but increased efficiency and reliability in their own service is relied upon for maintaining their proper proportion of traffic.

In connection with the subject of *stock dividends* enters the little question of honesty of administration. The policy that will secure such a scale of operations as the above renders unavoidable enlarged construction accounts and additional investments. Sometimes these accounts exceed correct limits, through providing capacity in excess of demand; but, by far the most gigantic source of their recent accretions, is the issuing of shares without full consideration. Shares flow out by millions—to use the language of President Potts—in which other full

consideration has been given, for representations of real or nominal profits, which, if real, are in excess of fair dividends. Shares are also frequently issued for premiums when, upon consolidation of several roads into one, their respective investment accounts need equalization.

I heard a prominent railway official remark a short time since, that it has been demonstrated that a railroad between *any two points*, in this country, will pay provided it is *managed*. Perhaps the stockholders of some roads we could name would like to learn the trick.

RAILWAY MANAGEMENT—FOREIGN AGENCIES.

Is There No Remedy for This Consumption of the Purse?

BY PAUL STORK.

There has grown up in connection with every prominent railroad in the North a small but terribly expensive class of officers who persistently ignore a great truth clearly recognized by the projectors of our railways, and which the very existence of the roads themselves clearly demonstrates, and that is that every road has many and in most cases ample sources of revenue within itself, or flowing to it through natural channels, which cannot be diverted; and that by far the greater portion of the traffic that is secured with so much cunning and expense through concessions, commissions and special agencies, would unquestionably seek the same channels, and at higher rates, were no extraneous influences whatever brought to bear. The far-seeing wisdom that projected, and the capital that built our magnificent system of railway lines, was based on broader ground. These rivulets of quicksand, that superficially seem to flow, yet, in reality, absorb in their undercurrent more than they discharge, were afterthoughts, born of the shallowness of a class of specially smart men, connected with a very few roads; men mostly appointed through favoritism, or as a reward for their tenacity in clinging to office through all its varying grades, from the lowest round upward. This was the class of men that originated this system of outlying agencies and their concomitant evils; but the expenditure of resources that they involve no doubt greatly enhances the importance of certain railway officers, and there is no question whatever but that many roads are so unfortunate in some of their officers as to have those who are not only favorable to their continuance, but are constantly extending their vision or sounding their empty skulls to discover other fields wherein to scatter broadcast the revenues of the companies whose affairs they so shockingly mismanage. These shallow-pated, blatant-mouthed officers, in their frequent and prolonged peregrinations, or through their subordinates, discover a deserted hamlet, or perhaps a paltry inland town, that has no agency; and straightway they are suffused with unspeakable delight that they are the first to see and appreciate this new and unheard-of source of trade. The busy and inattentive manager is at once informed of its importance and the opportunity it affords to overreach some unsuspecting and plodding rival. Straightway a branch office is opened, or an agent subsidised, and for a few days the sapient officer is master of the situation. These efforts to secure a monopoly compel his competitors for the traffic to make similar arrangements, after which the business goes on precisely as before, except that the companies pay roundly for what previously cost them nothing; and, saddest of all, the man through whose low cunning or special smartness this additional expense originated derives *edat* from it; it strengthens the common belief entertained of such men that they are wide-awake, sagacious officers, actively alive to the interests of the roads they represent. Is it surprising, then, that the educated and thinking officers soon become discouraged, and, to sustain themselves more than to guard against any threatened hurt to their companies, plunge with headlong vehemence into all sorts of extravagance and industriously perpetrate every species of chicanery and senseless clap-trap. The money that is annually spent in gilding with artistic lettering the enormous plate glass windows of the special agencies in New York city alone, would, if properly expended, familiarize the public with the salient points of every prominent road in the country. The extent and the cumbrous character of these special agencies are fast becoming intolerable; their effect upon the finances and *morale* of our companies is mischievous and demoralizing. The constant scramble going on amongst them and the trickiness, which, with a few notable exceptions, is their stock in trade, destroy confidence, and are the frequent occasion of the blasting reductions from the standard rates; and these standard rates, be it remembered, high as they are comparatively, afford no adequate return for the capital invested except upon those roads bordered by a dense and prosperous population, or having an abundant and profitable through business.

The salaries, office rent, fuel, lights, and other incidental expenses of any one of these outlying agencies are truly enormous, but once granted and the agent selected and installed, he feels called upon to demonstrate his peculiar fitness for the trust confided to him. This he can only accomplish satisfactorily to himself through slight (to him) concessions, the effect of which is war,—a war in which these brave and well-paid soldiers fall at each other's throats, courting destruction; and they only cease in order to send back word from time to time of the many and surprising victories they have won over their less watchful foes. The attempt that is always made afterwards to fix the responsibility for these unnecessary wars only results in the jealous sustenance by each company of its particular agent.

These special agents are not like those connected with our insurance companies. They cannot make business. They cannot prevail upon a merchant to ship what he does not possess, or what—if rates are uniform on all competing lines (and they must be, for the stability and profit arising from such business depends upon the rates being made and kept so)—he would not ship without solicitation. The most that these special agents accomplish—supposing them to be equal in ability and attention to business—is to secure the privilege of giving a bill of lading or issuing a ticket, that, otherwise, the local agent would have issued. This is what they do, and their anxiety to make as big a showing as possible frequently embroils their companies and squanders the surplus revenue that follows legitimate business. If an agent could be secured possessing a monopoly of brains, or having acquisitions impossible to be secured in any other man, then the road employing him could feel assured that it was wise in incurring the additional expense. There are companies, perhaps, that imagine they possess this great advantage; anyway they all have one or more agencies in New York. Visit one of these agents and you will find him centrally located, where rents are high and where the noise is loudest. Noise is an essential concomitant; they breathe freely only in or near a crowd. Solitude maddens them. Behind their plate-glass windows they chat pleasantly with each other or a chance customer, or gaze with cheerful countenance and speculative eye at the rushing, roaring crowd without. They are essentially garrulous. It is their trade to talk. What are their thoughts? Who can tell! Each morning at early dawn there passes my room a man and a cart, the man crying in stentorian voice, "Straw!" At evening he returns, but he no longer cries: he gasps. The fountain has ceased to play. Nature has exhausted herself. But these agents! Nowhere could we find a better illustration of the truth of the old saying that men rapidly come to believe anything it is for their interest to believe. Your simon-pure agent talks from the hour of nine in the morning until the last lingering listener has departed at night, under the firm conviction that an instant's quiet upon his part would be followed by a total collapse of the company he represents. There are hundreds, nay, thousands of these agents. Let us together call on one of them. We will introduce ourselves as traveling Inspectors for his company. Mr. Rakeum, the agent, greets us with great cordiality and appears loth to let go our hand. But will we excuse him for an instant. He is at this moment deeply engaged. Accordingly we sit down and, to while away the time, glance over the bills of lading scattered over the table. What immense sheets! What quantities of writing cover them, and how nicely they are written, too! How laborious this agent's clerk must be! How important the agency! But let us go to work methodically. Ah! this bill is for a consignment from James Young & Co! We go on, but let us not skip. How long the preamble! How many written interpolations! This must be a magnificent day's work. How proud Mr. Rakeum must be! But where is the consignee's name? We are coming to it; Jameson & Openheimer, Pedunkville, Carrollton County, Illinois; to be speedily and safely delivered, one box hats, weight 40, charges \$1 through; seven per centum of which goes to Rakeum's road. Well, well! what an intolerable deal of sack to a morsel of bread! But that was undoubtedly a chance haul of the net. We take up another paper. We will omit the preamble and the inky fillings, and come directly to—what? As I live, the same identical box of hats! Ah! this is a duplicate for the home office. The chain must be complete, I see. These parties are evidently friends of Mr. Rakeum's; hence this expenditure of clerical labor, stationary, and Arnold's best, for seven cents. We will place these two papers aside. There are always exceptions. But this third one greets us as if we had met before. Ha! Can it be Jameson & Openheimer, Pedunkville, Carrollton county, Illinois. To be speedily and safely delivered, one box of hats, weight 40, Rakeum's percentage 7 cents. We glance hurriedly at the next sheet. It stares us blandly in the face,

innocent of ink, its virgin surface inviting consignments. Well, well, after all, it is important that a triplicate should be retained for reference, and this consignment is doubtless a concession made to some worthy patron of the line. But let us not bore ourselves further. Rakeum is evidently very systematic in everything he does. It is a virtue to be commended. We throw ourselves back in the chair. How deliciously soft and comfortable it feels; and it revolves too! We will look around. How shady and cool the office; how enviously the people stare at us from out the street. They mistake our ease for indolence. But what a magnificent woman, truly! And yes, by jove, she's flirting her handkerchief too! She mistakes us for—ah, Rakeum, Rakeum, you sly old dog. Have you no respect for Mrs. R. and the little Rakeums? But where is Rakeum. Oh, still talking to the hump-backed, black-whiskered little man with the hooked nose. How animated he appears. He will certainly secure the patronage of that same busy-looking little man. He touches the little hump-backed man familiarly on the shoulder and smiles on him. The black-whiskered little man wavers; he is won! No, there is evidently a link missing somewhere. I wonder if Rakeum has fits; that certainly seemed like a spasm. Maybe it was a smile though. But see! Rakeum touches him again, this time with both hands; he whispers something in his ear. That would seem to be superfluous. But no; the black little man puckers up his mouth and nods, and nods intelligently, too. Rakeum's got him. Hurrah! Rakeum writes rapidly on a slip of paper, and hooked-nose little man hurriedly leaves. We take our foot down from the railing and smile benignly on Rakeum. We are won by his sagacious diplomacy. The box of hats is forgotten. These foreign agencies are, after all, the great arteries of the road. We are gratified when Rakeum greets us again with a second hearty shake of the hand. There is a sly twinkle in his eye; veteran that he is, he is himself pleased with his victory. Let us congratulate him; he deserves it: he has won it. He drops into his seat with a crafty, self-satisfied chuckle. Let him enjoy his triumph for a moment. * * * * *

"You snared him at last. Eh!"

"Snared him? If I don't get that chest of old clothes, it'll be because Skinum cuts under the special I gave; in which case we will get it any way for the short haul and the arbitrary rate, as there is no other line running to Doodleville."

"Ahem! Consignment of clothing, eh? large shipment I suppose?"

"Never saw him before in my life, but I am to meet him again to-morrow. But here; here is my morning's work. I have been figuring with Skinum on that box of hats" (we shudder) "for three days. I gave the man a trifle less than regular rate, but the rascal fooled me; asked Skinum to do better and Skinum without any regard for the agreement we made offered a still lower rate, and I only got it after he had used up the whole percentage his company would have received. You can't place any dependence upon Skinum. But see here. Just received this."

TELEGRAM.

"To Jonathan Rakeum,
No. 7 Hurricane St.,
New York.

Rates reduced one-eighth of one cent on HAMS! Not promulgated yet!! Look out!!!

Edward Slogger
G. F. A."

"I'm off. Skinum's behind the times. But here; before I go let us look around a little. Here's my record book in which I keep a copy of every bill. See. Three caddies tea. And there; four boxes candles. Unusual shipment. Dreadful fight over it! Had to cut clear down to the bone. Skinum was determined to have 'em, but finally I took the fellow to the theatre and that secured it. But look here; five bales gunnies weighing seven hundred pounds. Large shipment that! Skinum offered man half rates, I threw off one-half and gave him a pass."

"Do you give many passes?"

"Yes. Can't do anything without passes. Skinum has 'em. But come; I am going to make some figures on hams. We will stop at Houghton's on the way and get something cool."

"Thank you."

* * * * *

Now I have had it in my mind all the time to wind up by pitching into the Rakeums and the Skinums; to say in fact that they were an unnecessary as well as an expensive luxury. But, Rakeum is such a deuced clever fellow, so good natured and attentive, that really you'll have to excuse me, I can't do it.

—Two new locomotives for the Denver Pacific Railway, passed through Cheyenne on the 29th.

TUNNELS OF THE PACIFIC RAILROADS.

[Abstract of a Paper read before the American Society of Engineers, Jan. 5, 1870, by John R. Gilliss, Civil Engineer.]

During the past summer the track has been completed across this continent, and so much sooner than was thought possible, that the difficulties overcome are apt to be underrated. Some account of a single item in the great work may therefore be interesting.

Between Omaha and Sacramento there are nineteen tunnels. Four of these are on the Union Pacific and fifteen on the Central.

CENTRAL PACIFIC TUNNELS.

The tunnels of the Central Pacific are nearly all near the summit, where it crosses the western range of the Sierra Nevada. The line here lies on steep hill-sides, in some cases being for long distances, on a face of bare granite, more or less broken by projecting ledges and boulders, but with an average slope often greater than 1 to 1. In such places embankments were almost impracticable; the hills were too steep to catch the slopes, and most of the rock from cuts was thrown far down hill by heavy seam blasts. On these accounts the line, for two miles east of Donner Pass, was thrown further into the hill than on original location, thus adding to the depths of cuttings and increasing the number of tunnels, but saving retaining walls, and where tunnels were made, enabling the work to be carried on in winter. Another important object was the saving of snow-covering where tunnels were made, and giving a good foundation for it where they were not. It is within these two miles that seven tunnels are crowded.

Tunnels 1 and 2 are both west of Cisco, a small tract 92 miles from Sacramento, and within 13 of the summit. They were both finished in 1866. During the fall of that year the track reached Cisco, and as fast as the gangs of Chinamen were released they were hurried to the summit to be distributed among the tunnels in its vicinity. The year before, some gangs had been sent to summit tunnel No. 6, and commenced the cuts at its extremities; winter set in before the headings were started, and the work had to be abandoned. To avoid a repetition of such delay, the approaches to all the tunnels were covered with men, and worked night and day in three shifts of eight hours each. Thus time was saved, and the tunnel organization started at once. As an illustration of the hurry, I may mention walking two miles over the hills after dark, and staking out the east end of No. 12 by the light of a bonfire; at 9 o'clock the men were at work.

In November and the early part of December there were several snow-storms, just enough to stimulate without delaying the work. The rocky sides of Donner Peak soon became smooth, slopes of snow and ice covering the trail that led from tunnel 8 to 9; it remained impassable until spring, and communication had to be kept up by the wagon-road, five or six hundred feet below. This, the Dutch Flat and Donner Lake wagon road, was opened soon after it was decided to adopt this route. From the Pass the descent toward the lake was over very rough ground, requiring heavy side cuts and retaining walls with numerous zigzags to gain distance.

From this road the scene was strangely beautiful at night. The tall firs, though drooping under their heavy burdens, pointed to the mountains that overhung them, where the fires that lit seven tunnels shown like stars on their snowy sides. The only sound that came down to break the stillness of the winter night was the sharp ring of hammer on steel, or the heavy reports of the blasts.

Winter of 1866-7.—By the time winter had set in fairly the headings were all under ground. The work was then independent of weather, except as storms would block up tunnel entrances, or avalanches sweep over the shanties of the laborers. Before tracing the progress of the work underground, it will be well to see the character of weather out-doors.

A set of meteorological instruments was furnished by Colonel Williamson, of the United States Engineers, consisting of barometer, wet, dry, maximum and minimum thermometers. These, with wind, clouds, etc., were recorded three times a day, and hourly during ten days in each month. From this record the table of storms given in appendix C was made.

Snow Storms.—These storms, 44 in number, varied in length from a short snow squall to a two-week gale, and in depth from $\frac{1}{2}$ inch to 10 feet—none less than the former number being recorded, nor had we occasion to note any greater than the latter. This, the heaviest storm of the winter, began February 18th, at 2 p. m., and snowed steadily until 10 p. m. of the 22d, during which time 6 feet fell. The supply of raw material was then exhausted, but the barometer kept low and the wind heavy from the southwest for five days more, by which time a fresh supply of damp air came up from the Pacific, and then, as the machinery was still running full speed, this was ground up without delay. It snowed steadily until March 2, making 10 feet snow and 13 days storm. It is true that no snow fell for five days, but it drifted so furiously during that time that the snow-tunnel at east end of tunnel No. 6 had to be lengthened 50 feet.

These storms were grand. They always began with a fall in the barometer, and a strong wind from the southwest, hurrying up the tattered rain-clouds or storm-seed in heavy masses. The barometer, which averaged 23 inches, would drop sometimes as low as 22 $\frac{1}{4}$. The thermometer was rarely below 20 degrees at the beginning of a storm, and usually rose to 32 degrees before its close, so that the last snow would be damp and heavy, sometimes ending in rain. The storms ended, and clouds were scattered by cold winds blowing over the eastern range of the Sierra Nevada; these raised the barometer and dropped the temperature at once. The lowest temperature of the winter was from a wind of this sort, 5 $\frac{1}{2}$ degrees above zero.

Our quarters were at the east end of Donner Pass, but still in the narrow part. About the second or third day of a storm the wind would be a gale, sometimes 10 pounds to the square foot; and would plow up the new-fallen snow to heap it in huge drifts beyond the east end of the pass. About 30 feet from our windows was a

large warehouse; this was often hidden completely by the furious torrent of almost solid snow that swept through the gorge. On the cliff above, the cedar trees are deeply cut, many branches of the thickness of a man's wrist being taken off entirely by the drifting snow-flakes.

No one can face these storms when they are in earnest. Three of our party came through the pass one evening, walking with the storm—two got in safely. After waiting a while, just as we were starting out to look up the third, he came in exhausted. In a short, straight path, between two walls of rock he had lost his way, and thought his last hour had come.

Snow tunnels.—Before the snow had acquired depth enough to interfere much with the work, the headings were all started. The cuts at their entrances soon filled up with snow, but drifts were run through them, in some instances large enough for a two-horse team. Through these snow-tunnels, whose lengths varied from 50 to 200 feet, the material excavated was hauled in carts or on sleds to the waste banks. These snow-tunnels kept settling at the crown, so that they had to be enlarged from time to time, otherwise they were perfectly satisfactory.

The most remarkable snow-tunnel was made to connect the two ends of tunnel 8. The spur through which this is made terminates in a vertical bluff of granite 100 feet high. To get around it during the fall, a rope was fastened to the rocks at a point where there was a deep descent of 30 or 40 feet. During the early part of winter, a snow-drift formed on the face of this bluff, descending in a deep slope from its top to the wagon road, 200 feet below. On this slope a trail was cut and used for a month or two.

Later in the winter, when the accumulation of snow made it practicable, a snow-tunnel was excavated through the drift and around the face of the bluff. Windows were made at short intervals for light, and to throw the material out in excavating, and steps cut where a descent was necessary. One flight of these led down to the blacksmith shop, buried still deeper in the snow, while the main passage led into one already excavated at the east end of tunnel 8. The snow kept settling down hill and away from the bluff, so that there was an open space of three or four feet between it and the rock towards the close, which was far from inspiring much confidence in the route.

Between tunnels 7 and 8 there is a deep ravine, in crossing which the road has a 4x5 feet box culvert, and a retaining wall on the lower side at 75 feet extreme height. The foundation was begun in fall, but stopped by winter, and the ravine filled with snow. Next spring a snow-tunnel was commenced about 200 feet down the ravine, and run in to strike the unfinished foundation. Smaller tunnels were run to quarry stone got out in fall, and a cave dug over the foundation large enough to work in. The culvert was built, and by the time it was finished the depth of snow overhead had decreased to 25 or 30 feet; this was excavated by a stream of water, and the retaining wall commenced.

Snow cuts.—In spring, when the road has begun to be bare, so that sleighs can no longer be used, there are very heavy banks of snow to cut through to make the road passable for wagons.

In June I measured one of these cuts through the end of a snow-slide, and found it 25 feet deep. A week later the road was dusty in the centre, but the snow-banks were not all gone until July, so that we had at that place the strange spectacle of sprinkling-wagons watering a road between two walls of solid snow.

Alignment.—As soon as each heading became sufficiently advanced, the centre line was secured, generally by small holes drilled in the roof, with wooden plugs and tacks. These points were placed as far apart as the length excavated would permit, and from them the line produced as the work advanced. In most cases the entrances were afterwards so blocked up with snow that it was impossible to recur to the line outside, and the tunnels were completed from the points first put in.

In running lines outside during the winter, it was generally necessary to make deep cuts, and sometimes tunnels through the snow, to get at the original transit points.

Most of the tunnels are on curves, No. 13 being on one of 573 feet radius, with 87 degrees of curvature inside the tunnel. In this, as in No. 11, the usual difficulties of working with instruments by candle light were much increased by the numerous temporary timbers in the headings. The lines met in the centre of the tunnel, parallel to each other, but 2 inches apart. In the other cases the discrepancies were too slight to notice.

Dimensions.—Most of the work was through solid rock, which did not require lining, and the following dimensions were adopted: Bottom, a rectangle, 16x11 feet; arch, a semi-circle, 16 feet in diameter; grade at centre of tie, and 1 foot 3 inches above sub-grade.

Tunnel 11 was partly, and tunnel 13 wholly, lined with timber in the following manner: 12"x12" sills were placed on each side, and posts 12"x16" mortised into them. The latter support arches, each composed of 3 thicknesses of 5"x12" plank, breaking joints, and bolted with $\frac{3}{4}$ inch iron bolts, thus making a solid arch of 180 square inch sectional area. The distance from centre to centre of arches varies from 1 $\frac{1}{2}$ feet to 5 feet, according to material. Over the arches, and where the material required it, on the sides, also, split lagging about 2 $\frac{1}{2}$ inches thick was put in. The width at sub-grade inside of posts in 17 feet; at springing line inside of arches, 19 feet; giving a batter of one foot on each side. Height of crown above grade, 10 feet 9 inches, thus leaving room for masonry inside the temporary wooden lining.

Tunnels 1 and 2 were lined in a similar manner, except that the batter of side posts was only 6 inches.

In these tunnels, through soft material, the heading was supported by temporary timbers. Chambers were then excavated at the sides to below sub-grade, for the sills, and the central core left to support the shores which held the material above in place. As the timbering advanced, the core and false work were removed.

In tunnel No. 12, a short distance in the center was

found to be decomposed granite, and after the tunnel was excavated a light set of timbers was put in. They consisted of arches, each composed of 7 pieces of 10x19 inches timber, with side posts and sills similar to those already described.

In all the tunnels on curves, allowance was made for elevation of outer rail, so that top of cars would remain in centre of opening.

Laborers.—With the exception of a few white men at the west end of tunnel No. 6, the laboring force was entirely composed of Chinamen, with white foremen—the laborers working usually in 3 shifts of 8 hours each, and the foremen in 2 shifts of 12 hours each. A single foreman, with a gang of 30 to 40 men, generally constituted the force at work at each end of a tunnel; of these 12 to 15 worked on the heading, and the rest on bottom, removing material, etc.

When a gang was small, or the men needed elsewhere, the bottoms were worked with fewer men, or stopped so as to keep the headings going.

The Chinamen were as steady, hard-working a set of men as could be found. They were paid from \$30 to \$35, in gold, a month, finding themselves; while the white men were paid about the same, but with their board thrown in. The force at work on the road probably averaged from 6,000 to 10,000, nine-tenths of them being Chinamen.

Tunnel No. 6.—This, the longest tunnel of the road, is parallel to and about 400 feet north of Donner Pass. Its length is 1,659 feet, and greatest depth below the surface 124 feet, measuring from grade. The material is granite, of a medium quality, crossed by seams in every direction.

To expedite the work a shaft was sunk about the middle of the tunnel, its dimensions being 8x12x72.9 feet.

Work was commenced on the shaft August 27th, and for the first 30 feet it was sunk at the rate of a foot a day, after which its progress slackened, from delay in hoisting the material with a common hand derrick.

Meanwhile a house was being built over the shaft, and the hoisting engine was put up. The latter consisted of an old locomotive, the Sacramento, and, by an interesting coincidence, the first engine run in the State. This geared to a drum 6 feet in diameter. The house was 50 feet square, containing in addition to the hoisting apparatus, forges, fuel, tamping, etc., so that when snowed in, these articles would be close at hand. The shaft was divided by planking into two compartments, each 5 feet square; over these were two "jiggers" or transfer tables. The buckets were first of wood, then two additional ones were made of boiler plate, 4 feet 9 inches square by 2 feet 6 inches high, outside dimensions, and fitted for side dumping. They were loaded at the face of the work below, run on trucks to the bottom of the shaft, hoisted and transferred to other trucks to run out on the waste bank.

Total days' work on shaft, 85; average progress, 0.85 feet in 24 hours. Nitro-glycerine had not yet been introduced; with it progress would probably have averaged 1.5 feet.

Nitro-Glycerine.—This was introduced on the work early in 1867, to expedite progress of the summit tunnel. It was made on the spot by Mr. James Howden, and used in the four headings of tunnel No. 6 from February 9th, and to some extent in tunnel No. 8, but not enough to give data for comparison. After the headings of these tunnels were through, it was used in the bottoms.

In the headings of summit tunnel the average daily progress with powder was 1.18 feet per day; with nitro-glycerine, 1.82 feet, or over 54 per cent. additional progress.

In bottom of summit tunnel, average daily progress with powder, full gangs, was 2.51 feet; with nitro-glycerine, 4.38, or over 74 per cent. in favor of nitro-glycerine. The same number of men were used with both explosives.

The conclusion we may safely come to from the Central Pacific work, is, that in hard rock tunnels, with the same number of men, over 50 per cent. additional progress can be made by using nitro-glycerine in place of powder, and the expense will be reduced proportionately.

—The *Tribune's* Panama letter says of the Darien Canal expedition: "We have received the following important information, that the distance from the Atlantic coast to the foot of the Cordillera by the valley, watered by the river Caledonia, and following the course of the river, is only six miles. That at the foot of the Cordillera the land, by barometrical observation, hardly reaches the altitude of 150 feet. That the summit of the Cordillera is 1,000 feet in height. That the foot of the range on the Pacific side is 700 feet high. That on the six miles we examined of the river Chucute, of height of land gradually diminished, and that, although the mountain range is, in general, very lofty, we have discovered from its sides at the north of the river Chucute an extensive valley running to the southwest, in which, perhaps, the low levels may be discovered running toward the Pacific, which is required for the canal. The exploration of the valley of the Chucute has been commenced, and others will be carried on where the Cordillera is lowest. After the exploration is concluded from Caledonia Bay, the expedition will undertake like work from Sasarada, San Blas and Mandinga, and perhaps even by way of Chagres, until the most suitable place for the canal is discovered.

—A mass meeting of working-men held in San Francisco on the 28th ult. decided to oppose a proposition to vote aid to a railroad from San Francisco southward at approaching election unless the company should agree not to employ Chinese labor.

THE TRANSPORTATION OF FREIGHT.

Local Freights—Division of Freight Service—The Express System—Competition—Time of Delivery—Present Condition of the Internal Freight Business—Recommendations.

FROM THE MASSACHUSETTS COMMISSIONERS' REPORT.

The interest next in importance to the most perfect means of personal intercourse, and hardly even second to it, is the prompt and cheap handling of freights—the ready and economical interchange of those commodities which are the substance into which the whole industry of a manufacturing people works itself, and upon which it is dependent. Upon this subject, also, a comparative table of tariffs reveals the same unsatisfactory results as were revealed by those of fares. Through business, and the business between termini, in regard to freights, as in regard to passengers, cannot be said to be in an unsatisfactory condition, and is continually improving; but the interchange of local freights, among towns and villages between which no large regular business is done, is in a condition even less satisfactory than the travel between the same places. The difficulties seem to be of two kinds—those arising from excessive charges and those arising from delays in delivery.

In regard to charges, the subjoined tabulated statements will sufficiently show the present unsystematized condition of the freighting business on the principal roads of this Commonwealth. It will be noticed that, for the transportation of the same articles for equal distances on the several roads, charges range through a difference of 300 per cent. The tariff of the Boston & Providence road seems to be the most favorable to the public, as that of the Housatonic is the most excessive. Five staple articles, including raw materials, coal, and food, have been taken for examples, as conveying a clearer idea to most persons than the general tariff classifications. The points between which the charges are specified have, in all cases, been selected at hap-hazard. Many more as well as less onerous rates could be given, but the instances named are believed to present a fair average idea of local freights in Massachusetts.

[The tables give rates on various articles for distances from 8 to 16, 17 to 30, and 40 to 60 miles on seventeen railroads.]

DIVISION OF FREIGHTING SERVICE.

The question of time in transportation and delivery of freights is more complicated than that of charges, and calls for a careful analysis. It is well known that time is of the essence of all contracts for the transportation of freights, no less than persons. Rapidity, certainty and accuracy are the three essentials of a perfected system. Freight transportation is, accordingly, everywhere divided into different classes, and delivered, with more or less of certainty and rapidity, at a cost proportioned to the care and expense involved. In France we find the "*Grande et Petite Vitesse*," in England, the "Goods Traffic" and the "Parcel Delivery," but in this country the subdivision of labor has taken a different form, and out of it has arisen the Express system, which is peculiar to America.

THE EXPRESS SYSTEM.

The railroads of the United States transport, on their own account and under direct contract with the owners of goods, scarcely anything but the coarser descriptions of freights and the personal luggage of travelers. Light and costly articles have passed almost entirely into the intermediate charge of express companies. The subdivision is, in many respects, convenient; but several far from beneficial results have sprung from it. Three of these are deserving of special attention in this connection.

First. A wholly new and very intricate and costly system—constituting a machine within a machine, and a corporation within a corporation—has been called into existence, in a great degree unnecessary and imposing a very heavy tax on the community.

Second. Time has, as a rule, ceased to constitute any part of the railroad contract for freight transportation, except in so far as it is included in the very vague and intangible legal expression of "reasonable diligence."

Third. The railroads, devoting themselves exclusively to the carriage of heavy and slow freights, and turning the carriage of costly and rapid freights over to the express companies have not devoted their attention to the development of that cheap, quick and discriminating local freight business, so peculiarly essential to the prosperity of a community like ours.

These three results of the existing system of freight transportation the Commissioners propose to substantiate *seriatim*. The express business of this country took its rise in Boston in the early days of railroad development. Its originators had no capital, and very little has ever been actually paid in, by stockholders; it has mainly been built up out of profits. There are now in the United States over 3,000 licensed express carriers and agents; three companies alone report a nominal stock capital of \$58,000,000, and employ not less than ten or twelve thousand men. This interest returned to the officers of the Internal Revenue, in 1869, over \$22,000,000 of gross receipts.

The express system has been well said to take away from the railroad companies "the cream of the freighting business." The expresses make their contracts with the railroads, paying them as large a sum as the railroad agents, often interested in both enterprises, choose, or are able to obtain from them; in addition to which they exact from the public a sum sufficient to support their whole expensive system and to pay such dividends as they may be able to pay on a body of stock, over which the community exercises no control, and which consists largely of what is known as "water."

In respect to the influence of this subdivision of labor on the question of time, as an element in all contracts for transportation of freights, a marked improvement has of late taken place as regards through business, in the organization, by certain combinations of roads, of special time freight lines, designated as the White, the Red, the Blue, &c. Until the formation of these lines, and with the exception of these lines now, all contracts of railroad

companies directly with forwarders of merchandise were for what are known as slow and heavy freights. No time of delivery was specified, and the fulfillment of contracts was left for the construction of juries and courts of law, as to what constituted "reasonable diligence." As a result, the whole community was left to take its choice between the rapid and expensive express system and the uncertain and cheap railroad company transportation.

The third result specified, and that most injurious of all to a manufacturing community, was a necessary consequence of this state of affairs. The railroads, intent on other things, even discouraged the development of a local freight business, which should be both short and prompt. Their machinery and attention was more profitably employed in the traffic between distant points. Meanwhile our mills, workshops and warehouses, scattered through many villages and towns, and along all our water-powers and railroads, depend for their successful industry on this very interchange, cheap and prompt, of innumerable commodities. Time is with them more than with most others, the essence of transportation. The raw material, and every article which enters into its manufacture, must be perfectly accessible to the workman; and the manufactured product must be equally accessible to the merchant. This circumstance has forced the independent express system, as the only agency which, at any price, guaranteed a rapid and certain delivery, into remarkable development, as is evidenced by the six hundred and fifty expresses now in operation in Massachusetts alone. This also illustrates the peculiar need in which our community stands of a machinery of this description; as it appears that, with only three per cent. of the population of the whole country, twenty per cent. of all the licensed express carriers and agents were returned from Massachusetts—five times as many as from any other State in the Union except New York, and twelve per cent. were then from New York. This agency took possession of the local time freights, and the railroads not developing in themselves the machinery necessary for its prosecution, such fragments of this the most proportionately remunerative part of the whole carrying business, as were forced upon them became the source of annoyance and of loss rather than of profit. The difficulty is peculiarly felt where goods have to pass from one point to another through the hands of different corporations constituting connecting lines. There are no freight time tables and no systematized connections and transfers. The practice of uniformly claiming a delay of one day at a time of receipt of goods, a day for each and every transfer, a day for delivery, and an unlimited number of days for the shortcomings of any corporation beyond the limits of the State into the hands of which the merchandise may have chanced to pass—these various claims have construed away the whole meaning of "reasonable diligence." "Reasonable diligence" to-day means an ordinary delay of ten days between Boston and Central New York, and from four days to a week between points within the limits of Massachusetts. The express companies, on the other hand, contract for speed; they have their organization running throughout the railroad system; any parcel placed in their hands they remain responsible for, no matter what independent lines it may pass over, from the point of reception to that of delivery.

The most curious and, to the community concerned, the most unfortunate indirect result of this division of interests yet remains to be stated. The business of transporting small packages, through competition and the fact that it is obliged to support two sets of machinery, has become so small a source of profit, in many and important cases, to the railroads, with which the expresses would naturally contract, that it has become the policy of the roads wholly to discourage all connection with it. As a consequence, one portion of that part of the freighting business, which regularly pays three times first-class rates, and that part of it, also, which is peculiarly important to the industry of New England,—is wholly deprived of the benefit resulting from the railroad system. The express cart, for the carriage of merchandise, toils along over the highway, by the side of the track and behind the railroad train, hardly less unnaturally than a stage-coach might for the carriage of passengers.

No less than 105 expresses can be named, supplying towns in the vicinity of Boston, on routes varying from 5 to 18 miles in length, four only of which have any connection with railroads at all, and these for a portion of their business only. Of 47 expresses serving towns situated on every road leading out of Boston, three are reported as running 18 miles, three 16 miles, three 15 miles, eight 13 miles, and all the rest more than eight miles each, in competition with railroads. Forty-six of these employ 90 wagons and 250 horses to make their daily trips between their terminal points; moving perhaps 500 tons, with an expenditure of labor, which, combined with steam, would easily move five times that amount at the same cost. It is safe to say that these 250 horses, if employed by the railroads in Boston and the thirty-two towns now served by them, in simple terminal work, would do the whole of the express business for the towns, and leave 125 horses for the distribution of heavy freights. The community, of course, pays for all this waste of labor, time and power. One town, for instance, is reported as supporting 8 wagons and 26 horses to do the work which 4 wagons and 6 horses, combined with steam, could probably do quite as well;—another supports 23 horses and 12 wagons to do the work of four wagons and 6 horses. Numerous additional instances might be cited, were they at all necessary, to illustrate the subject. It is believed, however, to be indisputable, that the time and money which these companies now spend on the road, in supplying an expensive service of one or at most two trips a day, would, if economized in aid of steam, afford a dozen trips a day, at greatly reduced rates.

It is much more difficult to devise a remedy for the difficulty here suggested than for that involved in the similar question of travel. The conditions which enter into the transportation of persons are comparatively simple;—the elements of speed, distance and numbers

only have to be taken into consideration in the latter case, and a law can, without great difficulty be framed, which more or less nearly meets every exigency likely to arise. It is not so as regards transportation of freight. The articles which constitute the merchandise movement by rail are of infinite variety;—unlike passengers, they have to be stored, handled and delivered; they differ in bulk, in value, in weight and in character;—many are perishable or fragile, most are combustible and some are explosive;—even more than with passengers, time and speed vary the cost of transportation. Distance of carriage and the quantity of the article to be carried are most essential elements in the problem, as the same amount of handling is required in the case of goods carried one mile as in that of goods carried a thousand miles, and rolling stock is not unfrequently delayed as much in the one case as in the other. It is therefore manifestly impossible to lay down any general rule which will cover all circumstances. The only result which can be arrived at, which promises any benefit either to corporations or community, is the preparation of carefully devised tariffs, adapted to the peculiar needs and conditions of particular lines and regions, to be accepted by the corporations as the basis on which they are to be allowed to conduct their business, undisturbed, through a specified term of years. This system has been tried successfully in certain parts of Europe, and constitutes in fact the only alternative to protection against monopoly, through competition.

COMPETITION.

Nor would it be difficult to show that competition has, in the few cases where it has been tried in our internal traffic, proved the less reliable protection of the two. The Commissioners wish to call attention to this subject, as very general misapprehension exists in regard to it. On this point the experience of this country has been identical with that of England, which is stated very forcibly as follows:

"The evidence given before the [Royal] Commissioners by the leading railway authorities, was unanimous as to the failure of competition to promote the public interests. The public may have obtained a temporary advantage during the existence of competition, while the companies were impoverishing themselves by running against each other at low fares; but eventually they suffered very much in proportion to the poverty to which the companies had reduced themselves by the process. One of the effects of that competition is, that many of them are now endeavoring to recoup themselves for their loss at the public expense, and hence the rise in rates and fares in most of the districts served by distressed railways.

"It is a great mistake to suppose that the public interest is promoted by the construction of lines, whether the working of them be profitable to their owners or not. When they do not pay, the loss falls on the shareholders in the first place, but on the public in the long run. 'I believe that it is the greatest curse to any district,' said Mr. Sherriff before the commissioners, 'to have a railway company that does not pay a fair dividend.' When dividends are diluted and fall to zero, the public are worse served; the road and the rolling stock become necessarily depreciated; traveling becomes more dangerous; rates and fares are raised; and every improvement in accommodation demanded by the public is rigidly questioned and tardily conceded. Mr. Cawkwell holds that competition has even tended to make rates higher as well as dividends lower. The opening of a competing line has usually been followed, sooner or later, by arrangements between the companies intended to compete, on which there has been an immediate rise of rates above the former standard;—for the sufficient reason that there are two capitals on which interest has to be paid, and two lines that have to be worked to accommodate the same traffic, instead of one capital and one line. Mr. Harrison says: 'There is not a single instance at the present moment, where a line has been granted upon the ground of affording competition, where that competition exists.' By granting two lines instead of one, the ability to reduce the fares is lessened; whereas, had one line carried the traffic instead of two, the carrying company could well have afforded to make a large reduction in the fares." *

But, however it may be with large centres, so far as the internal freighting business of Massachusetts is concerned, competition is out of the question. Not one point in twenty is, or can be, supplied by more than one line of road, and, as the preparation of any general freighting law of universal application seems to be impracticable, the simple alternative is presented of allowing the corporations, as at present, to do the internal freighting business in the manner indicated in the tables heretofore given, subject to no restraint save the narrowest views of self-interest, vaguely influenced by local public opinion, or by elaborate analysis and investigation, to arrive, in process of time, at some results which will enable the community to exercise an intelligent supervision over each particular member of the system.

TIME OF DELIVERY.

It is also a matter of great difficulty to divide the question, and to legislate in regard to time of delivery, leaving cost of transportation to provide for itself. The law-making power should be resorted to, to effect what is really needed in this case, only as a last extreme remedy. The sphere of legislation is at best but to regulate and not to call into existence,—but the need now felt is of some more perfect machinery for the interchange of freights by rail; some adequate provision to meet the wants of the rapidly developing industrial system of Massachusetts. It is the same decided revolution and division of labor, as regards the carriage of merchandise, which was years ago effected in regard to passengers, when that service was divided into through and local trains. A system is to be called into existence, and the movement in this case should come from the railroads. The Commissioners, therefore, while dealing

with this subject, prefer to confine themselves to representations and suggestions to those managing the several railroads of the Commonwealth, a careful consideration of which they believe will accrue no less to the benefit of corporations than of the community, and not improbably may avert a dangerous agitation and final resort to the supreme law-making power.

PRESENT CONDITION OF THE INTERNAL FREIGHTING BUSINESS.

In the first place, the condition of affairs until recently, and, in a less degree, even now prevailing throughout what is known as the railroad system of Massachusetts, would justify, on the part of the Commissioners, far stronger language than any here used. Indeed, it is remarkable that industrial development should have proceeded as rapidly as it has, while the interchange of commodities has remained so hampered, and our railroads so behind the requirements of the times. Even now, in these respects, we do not possess a railroad system; we have, indeed, a number of disconnected roads, more or less well or ill managed, but as for a developed organization, it does not as yet exist even in theory. Considering that it is forty years since the first railroads of Massachusetts were organized,—that there are now fifty railroad corporations within the limits of the State, operating 1,300 miles of track, it seems almost incredible that, up to within the last eighteen months, the railroads on the north side of such a city as Boston, had no connection by rail with the railroads on the south side of the city, unless they went forty-four miles across the country to Worcester to find it. Such, however, was the fact. It cannot be too clearly pressed on the public mind that the cost of all transportation is a tax;—exactly as much of a tax as the foreign *octroi*, as our own tariff or our town levies. Freights on raw material on their way to the workshop, are a tax on production; freights on the manufactured article on its way to the salesroom, are a tax on consumption. Every handling imposes new charges; every break in the machinery of transportation exacts an additional payment. The history and even present condition of affairs prevailing in and about Boston in this respect, reflects severely on our railroad managers, and does no credit to our general enterprise. Every pound of freight brought into this city by rail on one side, or landed on our wharves on another, had, until within a few months, to be handled by men and drawn by horses before it could leave the city or reach a warehouse. The streets were blocked with bales of cotton on their way to Lowell, with boxes of merchandise on their way to the interior, with iron and steel, and even locomotives and cars for railroads which could not receive them direct from other roads, with barrels of flour, the price of which was enhanced about as much between Worcester station and the vessel's hold, as between Worcester and Boston. This condition of affairs existed for nearly thirty years. It is now partially, and only partially, remedied. The roads do indeed connect by rail within less than forty miles of Boston; they should do it within the limits of the city. The completion of the Marginal Freight Railway would, even more than the reconstruction of the Grand Junction, facilitate the exchange of cars between the several roads, and materially aid in the collection and distribution of freights, by bringing the cars to every wharf and warehouse along the whole front of the city. Probably the streets of Boston can be relieved of one-half of the heaviest teaming through them by means of these tracks, when completed. The use of this road would also in itself compel the adoption of a clearing-house system between the several roads. It is to be regretted that the Boston & Albany Company has not thought it expedient to take and complete this road under the authority conferred upon it so to do, by the last Legislature. Meanwhile, as the matter now stands, though the several roads are indeed connected by rail in a circuitous way over the Grand Junction track, they can hardly be said to be connected in any other way. Take, for instance, that eastern region, which has always been in closest alliance with Massachusetts. Goods can be passed through from Albany to Portland without breaking bulk;—they cannot, however, go through on any system of *pro rata* freights between the roads,—they must pay arbitrary or fixed rates beyond Boston. This city is still a break in the railroad system. Merchandise can go through a dozen hands between New Orleans, or Omaha and Boston, paying a fixed sum, which the railroads apportion among themselves, according to distance, but, if it touches the last named place to go North or South or East, the line breaks, the system disappears. So much as regards heavy freights. As for small parcels, with all our boasted ingenuity we have devised nothing which in any way approaches in perfection of detail, the English *Parcels Delivery*. The great mass of all freight movement, except of the coarsest descriptions, within the vicinity of ten miles of Boston, is done by horses, and, even of the coarsest descriptions, grain, for instance, is carted from Boston to Salem, and granite from Quincy to Boston. This subject has already been sufficiently discussed; it now only needs to be said that, at present, we employ and pay two sets of machinery to perform a duty badly, which one set ought to perform well.

RECOMMENDATIONS.

The remedy remains to be devised. The end in view is sufficiently distinct; it is to supply commodities, and to effect their interchange throughout the community, in such a manner, both as regards time and costs, as shall be most satisfactory to it; due consideration being always had to the fair remuneration of the corporations. With this end in view, the Commissioners wish to suggest to several corporations the general assumption by them, individually, of the local express business on the lines of their several roads; they would then further recommend to the Legislature that the corporations be authorized to form themselves, under proper restrictions, into a common associated despatch line and parcels delivery, to operate over all the roads of the Commonwealth, and to connect with every town touched by the railroad system. The business of this association

would, of course, be confined to taking charge of goods and parcels which had to pass over different and connecting roads. A machinery somewhat similar to this, though applied only to the transportation of heavy freights is already well known to all railroad managers, in the Red, White and Blue lines. It is not expedient, at this time, to enter largely into details, but the Commissioners, after consulting with experienced railroad managers, are of opinion that an organization on this general principle could be effected without any considerable outlay of money or exertion of ingenuity, to the great profit of the roads and advantage of business intercourse. Every road, in the Commonwealth would, of course, be a party to the arrangement, and, so far as the freight department was concerned, would contribute to the equipment a quota of cars, specially designated, according to mileage and traffic receipts. The business of such a line would probably be confined to such articles as now go by expresses, or such as would pay the price of speedy delivery, including collection and distribution by the wagons of companies. Not impossibly such an improved machinery might develop an increased traffic, which would, between certain large business localities and on certain main lines, justify the running, on established time tables, of entire trains of express freight cars; as a rule, however, the service could be performed by such cars forming, as now, a part of all accommodation trains. All freight agents and station masters throughout the Commonwealth would at once become officials of the association in all branches of the transportation of goods business, just as now they are, not infrequently, express agents as well as depot masters; any parcel of any size delivered to them in any part of the State would be forwarded, either through the agency of the individual line, or of the associated companies, to any point of destination. A clearing house, to keep account of cars apportion expenses would, perhaps, prove necessary in this case, as in the case of the colored lines; in any event a central office would have to be established, and a common superintendent appointed to organize and take charge of the duty of distributing parcels between connecting roads; and separate agencies must necessarily be established at all intersections of roads.

The obvious and only difficulty and danger which suggests itself in connection with such an arrangement is the concentration it will give to the already excessive power of the individual railroad corporations. This is, in itself, a serious matter, and should by no means be overlooked. On the other hand, such a system, in addition to giving a most needed impulse to all interchange of commodities, would bring the whole method and management of it under one responsible head and within reach of public regulation, which now it is not; it would leave the field of competition in this business still open, as the roads would, of course, be obliged to transport all articles for other carriers, as well as for the public, without discrimination; and, finally, even as the old Suffolk Bank system, though apparently drawing many great moneyed corporations together into a more efficient combination, was, in practice, found to be not only harmless to the public, but a most useful and, indeed, as passing events now indicate, an indispensable adjunct to financial and banking operations, the Commissioners see no conclusive reason why a system, based on principles somewhat similar, should not be applied to the process of transportation with not less advantageous results.

Telegraphic Communication with Australia.

An apparently sound scheme for bringing the Australian colonies into telegraphic communication with the mother country has been introduced this week. It is to be styled the British Australian Telegraph Company (limited), and is created in connection with the five companies by which the various sections that will constitute the great through line from England to the East have already been put in active progress. The present work is to consist of a cable of 563 miles from Singapore to Batavia, to join the Dutch lines which run to the southeastern extremity of Java, whence another cable of 1,163 miles will be laid to Port Darwin in Australia, where a land line of 800 miles will connect the system with Queensland, New South Wales, Victoria, South Australia, Western Australia and Tasmania. The capital is to be £600,000, in shares of £10, and the making of the entire line is to be confined to the Telegraph Construction and Maintenance Company, at the contract price of £634,000, of which £120,000 is to be in paid-up shares. The Falmouth & Malta, the Anglo-Mediterranean, the British Indian, and the British Indian Extension companies are to allow the same rebate upon their through rates on all messages forwarded over their route by this company as they have granted to the China Submarine Company, thus creating a reciprocity of interests calculated to operate as a strong inducement to the harmonious working of all. According to the prospectus, the estimate of profit, reckoning 25 daily messages from the Dutch islands, and but 65 from the whole of the Australian colonies, is £121,665, or about 18 per cent. per annum, exclusive of local and Chinese traffic, and should this be steadily realized it may be hoped the directors will have the wisdom thenceforth to preclude all chance of future competition by giving their customers the benefit of a constant reduction in charges in proportion as any increased success may be attained.—*Engineering*.

—Baron Ferdinand de Lesseps has just presented a most flattering account to the shareholders of the Suez Canal. He states that that about £320,000 will be required this year to complete the works, but that, *per contra*, the receipts are extraordinary. From the day of the opening of the canal to the 15th of March, 200 steamers and nine sailing vessels, representing a tonnage of 146,631 tons, had effected the passage, and brought a credit to the company of £24,525. M. de Lesseps is very sanguine about England, which has already sent through the canal vessels equalling 56,052 tonnage; and he adds that he knows, for a fact, that one English company has put down in its calculation of current expenses, £100,000 a year for "dues to the Suez Canal."

* The "London Quarterly Review," Oct. 1868, (Am. Ed.) p. 167.

General Railroad News.

OLD AND NEW ROADS.

Iowa Central.

The Oskaloosa *Herald* learns that the contract for grading the road from Oskaloosa to Marshalltown has been let to Messrs. Greene, Rowley & Co., and is to be all completed by November 1st, next. The contract for the small bridges from Oskaloosa to Albia has been let to Mr. Noyes, of Steamboat Rock, Hardin county. Five hundred tons of iron was due at Ackley on the 15th inst. for the work on the northern extension, and 500 tons more will soon be shipped to Albia to be used in ironing the track northward from there. Eight thousand tons of iron have been purchased and paid for, and will at an early day be forwarded to the work.

Judge Greene, of Cedar Rapids, one of the contractors, is, we believe, President of the Burlington, Cedar Rapids & Minnesota, and the Rockford, Rock Island & St. Louis companies.

California Pacific.

This is the road which runs from Vallejo at the northern end of San Francisco Bay to Sacramento, sixty miles, making with a ferry of twenty miles between San Francisco and Vallejo almost an air line from the former place to Sacramento. A telegram from San Francisco dated the 30th ult., says that it was then rumored there that the Central Pacific had bought this road for \$3,000,000. They have heretofore been rivals.

Milwaukee & St. Paul.

Oshkosh is trying to secure a connection with this road by way Winneconne.

Missouri River, Fort Scott & Gulf.

This road was completed on the 30th ult. to the northern line of the Indian Territory about six miles west of the east line of Kansas. It is the first line to reach the Indian Territory. Negotiations will be necessary in order to obtain permission to cross the Indian Territory on the way to Texas. The Missouri, Kansas & Texas road running southeast from Junction City, will reach the same line at a point about eighteen miles further west in a very short time. The South Pacific will reach the east line of the Territory six or eight miles further south in a few weeks.

The following letter from Mr. Joy, addressed to L. J. Denton, Mayor of Baxter Springs, Kansas, was in answer to inquiries in regard to branch roads to Chetopa and other points:

"The M. R., Ft. S. & G. R. R. Co. have, and can have, but one line, and that is the main one. When other roads come to be built under other organizations; and when a road shall be built southwest from Columbus, it will not be the M. R., Ft. S. & G. R. R., but under another charter.

"The M. R., Ft. S. & G. R. R. has no cause to build branches. The road to Baxter, therefore, is not only its main line, but its only line."

Marengo to Cedar Rapids.

A call has been issued for a convention of delegates representing Des Moines, Dubuque, Clinton, Marion, Cedar Rapids, Marengo, and Grinnell, and the various intermediate points interested, to meet at Cedar Rapids, on last Wednesday, to effect the building of a road from Marengo to Cedar Rapids, and thus form a direct connection between Des Moines and Central Iowa, and Dubuque and northwestern Iowa.

Omaha & Northwestern.

Washington county, Nebraska, gave a large majority, on the 3d, in favor of issuing bonds to the road. The Omaha *Herald* says this assures the immediate resumption of the work and its vigorous prosecution. It is expected that thirty additional miles will be completed by next December, connecting Omaha with the southern line of Burt county. The engineer, Mr. House, will at once proceed to locate 15 additional miles, and the work will be let as soon as profiles can be furnished.

Iowa Midland.

The road-bed and right of way of the Mississippi, Maquoketa & Northwestern Railroad has been transferred to the Midland Company, on the express condition that the road of the latter shall be completed from Lyons to Maquoketa by December 1 next.

Fort Dodge & Mankato.

According to the Blue Earth City *Post* the negotiations for money to build the road have fallen through on account of the transfer of the St. Paul & Sioux City road to the Lake Superior & Mississippi Company. Another project for giving Blue Earth City a connection with the St. Paul & Sioux City road is now mooted.

Great Western of Canada.

The Detroit *Post* reports that James F. Joy, received a cable despatch last week from the Directors of the Great Western Railway, at London, saying that it has been determined to proceed at once with the construction of the Canada Air Line Railway from Glencoe to Buf-

falo. A double track will be laid from Detroit to Glencoe.

Marietta & Cincinnati.

The stockholders of the Marietta & Cincinnati Railroad Company have voted to accept the provisions of the recent law of the State, allowing bonds to be issued with power to vote. They also ratified the previous action of the Directors, authorizing the issue of three millions of third mortgage bonds, with the powers to bond-holders contemplated by this law.

Mansfield, Coldwater & Lake Michigan.

This is the name of the Ohio corporation which proposes to build a railroad between Mansfield, O., and Kalamazoo, Mich. In Michigan the line is called the Kalamazoo & Mansfield. Besides them are other corporations which propose to build a line close to this from Mansfield to Sturgis, Mich. The Mansfield, Coldwater & Lake Michigan has for its incorporators James Purdy, S. B. Sturges, E. A. Rees, D. Dirham, and L. B. Matson. Chicago & Southwestern.

Dolman, Walsworth & Co., who have the contract for constructing the line between Platte City and Plattsburg, Mo., (near Leavenworth), advertise for men and teams.

The Chillicothe *Tribune* says: "It is now settled beyond any question that the road will come to Chillicothe from Leavenworth; but it is probable that it will continue toward Chicago on the line of the Chillicothe & Des Moines City Railroad."

Union Pacific.

The bill providing for the junction of this with the Central Pacific at a point five miles northwest of Ogden and graduating the six sections of lands at that point for the use of the two roads as a site for shops and a town has passed Congress. The Union and Central have now completed a settlement of their difficulties and therefore may properly be called Pacific.

Pittsburgh & Connellsville.

The Philadelphia *Evening Telegraph* says that this road is being pushed forward rapidly, with every prospect of being completed within a year. Connecting lines, opening up a new and direct route from Chicago to the seaboard, are already projected. A connecting road is also in prospect to lead from Pittsburgh to Erie. Negotiations are said to be on foot for commencing work on the latter at an early day, and there is reason to believe it will be successfully prosecuted. Concerning the former the Cumberland *Transcript* says: "Surveys are being made through Ohio, by way of Canton, for a route direct to Chicago, in connection with the Pittsburgh & Connellsville Railroad. This will give the most direct line in the country from Chicago to the seaboard; the route from that city to Washington through Cumberland being the shortest that can possibly be built between the two points."

Amazon & Pacific.

Agents are in New York making arrangements for the survey of a railroad line between the head of navigation on the Amazon westward over the Andes to Guayaquil on the Pacific coast in Ecuador, about 150 miles south of the equator.

Wisconsin, Iowa & Kansas.

This is the title of an organization formed at West Union, Fayette county, Iowa, on the 21st. Wm. Larabee, President; Wm. McClintock, Vice-President; S. B. Zeigler, Treasurer; Joseph Hobson, Secretary. The proposed route is from Postville, Iowa, a station on the Milwaukee & St. Paul, in a southwesterly direction to the southern boundary of Iowa near Range 34, West.

Des Moines & McGregor.

The State *Register* says: "We have seen a letter from Alexander Mitchell, President of the Milwaukee & St. Paul Railway, to Governor Merrill, in which he says 'that if the Des Moines & McGregor Railway Company will grade the road, his company will tie, iron, and operate it.'"

St. Paul & Chicago.

The Hastings, Minn., *Gazette* says: "Wm. Danforth, resident engineer, has removed to Red Wing, in order to be nearer his work. His place here will be filled by 'J. T. Dodge.'"

Judge McClure has appointed D. F. Langley, of Hastings; Paschal Smith, and H. L. Bevins, of Red Wing, as Commissioners to appraise the property taken for the use of the St. Paul & Chicago Railroad between this city and the latter town, and to ascertain and determine the amount of damages to be awarded to the several owners thereof."

Mr. Dodge and Mr. Danforth were in Lake City on the 23d, examining the different routes through the town, concerning which there is much dispute.

Laclede & Fort Scott.

The Buffalo *Reflex* announces that "the contract for constructing the road bed of the Laclede & Fort Scott railroad from Lebanon to Buffalo, has been let to

"Messrs. Burgess & Co., of St. Louis, on terms considered very favorable by the officers of the company. Mr. Burgess is well known as an experienced contractor, having done some of the heaviest work on the South Pacific railroad between Arlington and Springfield. Work will be commenced as soon as the chief engineer can prepare the route for grading, which will be before the lapse of many weeks."

"The chief engineer is now engaged in looking out the most practicable route from the mouth of Sugar Tree Hollow, on the Niangua river, to this place. This comprises some of the most difficult work between Lebanon and Buffalo, and will probably consume several days to come."

Mobile & Montgomery.

G. Jordan, Engineer and Superintendent of this road, says that the company is about to extend the road from the present terminus at Blakely across the delta of Mobile Bay into the city of Mobile, a distance of twenty miles, embracing a great amount of heavy work—3,500 feet of bridging on iron piers, two large draw bridges, 25,000 feet of pile trestle-work, and 150,000 cubic yards of earth work. The bridge over the Tensas will be 2,000 feet long, and that over the Mobile river 1,000, resting either on screw or pneumatic piles. Plans and specifications can be seen after the 15th of May, and proposals to build all these different parts of the work, and also for cleaning cross-ties and tracklaying, will be received until the 1st of June. Bidders may offer estimates on either screw or pneumatic piles for the bridges. This is one of the most important and extensive works offered to bridge builders.

Belleville & Southern Illinois.

Wm. McCutchen, of Sparta, has been awarded the contract for grading this road from Coulterville ten miles southwest. A large force is working on the line between Duquoin and New Athens, the present terminus of the road.

Detroit & Hillsdale.

A few miles of track are laid from Ypsilanti southwestward and it is expected Salina will be reached this week. The track is also laid for three miles on the Hillsdale end, and workmen are grading all along.

Kalamazoo & Mansfield.

Meetings have been held in Kalamazoo and Coldwater to consider the propriety of building a railroad from Kalamazoo southwest through Union City, Coldwater and Amboy, in Michigan, and Wauseon, Washington, Westfield, Fostoria and Tiffin to Mansfield, Ohio, there to connect with the Atlantic & Great Western, the Baltimore & Ohio and the Great Western.

Baltimore & Potomac.

Work was commenced on the 29th ult., on the great tunnel of this road in the northwestern part of the city of Baltimore.

Opelika, Gadsden & Guntersville.

The road runs from Opelika on the Montgomery & West Point Railroad via Jacksonville, Ala., to Gadsden and thence to Attala. It will, in connection with the Alabama & Chattanooga Railroad, make the distance from Chattanooga to Montgomery 60 miles shorter.

We learn from the Chattanooga *Times* that the section from Opelika to LaFayette is now under contract, and Mr. Pennington intends letting the section from Attala to Jacksonville at once. It is his purpose to open connection by rail with Gadsden within four months.

Kalamazoo, Hastings & Saginaw.

The Kalamazoo *Gazette* gives the following distances on one of the proposed routes—known as the Northeastern—from Kalamazoo to Saginaw:

From Kalamazoo to Hastings.....	27 miles
" Hastings to Ionia.....	37 "
" Ionia to Palo.....	11 "
" Palo to Carson City.....	8 "
" Carson City to Alma.....	17 "
" Alma to St. Louis.....	44 "
" St. Louis to Saginaw.....	33 "

From Kalamazoo to Saginaw.....127 1/4 "

It will be seen that the route runs in nearly air-line north-north-east to St. Louis, from which point it runs directly east, 33 miles, to Saginaw.

Fox River Valley.

The route of this road has been located to Geneva. It passes through the western limits of Aurora and Batavia, thus avoiding heavy expenses for right of way, and intersects the track of the Northwestern about a hundred yards west of the Geneva depot.

Grand Tower, Wittenburg & Iron Mountain.

We learn from the Post *Clarion* that the prospects of this road are "cheering." It is proposed to build from some point on the Belmont branch of the St. Louis & Iron Mountain Railroad east about fifty miles to cross the Mississippi river at Grand Tower so as to connect with the Illinois Central by the coal road from Grand Tower to Carbondale. Such a road must prove valuable in connecting the iron mines of Missouri with the coal deposits of Illinois.

St. Louis, Vandalia & Terre Haute.

"This connection between St. Louis and Terre Haute, lately completed by the building of the bridge over the Wabash, is one hundred and sixty-five miles in length, being twenty-five miles shorter than the old route.

Central Pacific.

Three hundred thousand dollars worth of the stock of the Central Pacific Railroad Company held by the county of Sacramento, was sold on Tuesday last for \$210,000, being at the rate of 70 per cent. on the dollar.

Chillicothe & Omaha.

The Chillicothe *Tribune* says that this road is located and put under contract to Gallatin, a place about twenty-five miles northwest of Chillicothe. The line from Brunswick to Chillicothe is already in operation.

Oregon Central.

A trust-deed from the company to F. D. Atherton, Milton S. Latham and Wm. Norris, transferring the franchise, rolling stock and interest of the company, together with a mortgage to secure the payment of \$10,950,000 of bonds, was recorded on the 27th ult. The amount of revenue stamps required on the mortgage was \$11,795.

Sedalia, Warsaw & Springfield.

This is a branch of the Tebo & Neosho projected to run from Sedalia, at the intersection of the Tebo & Neosho with the Pacific of Missouri, nearly due south about one hundred miles to Springfield. The city council of Sedalia, on the 30th ult., voted \$25,000 in city bonds to aid the project.

Iron Mountain & Helena.

A letter from J. C. Maccabe, Secretary of this company, informs us that the counties on the proposed line of this road are greatly interested in its favor. The city of Helena has subscribed \$50,000; Phillips county (in which Helena is situated), \$500,000; and the adjoining county of St. Francis is expected to vote \$100,000 very soon. Engineers are surveying the route between Helena and the line of the Memphis & Little Rock Railroad, and an effort will be made to build this section (forty miles long) this year. To accomplish this an attempt will be made to unite the assets of the Helena & Little Rock Railroad, or Midland route, to those of the Iron Mountain & Helena Railroad. The Legislature donated in 1868 \$15,000 per mile in State bonds to the Midland road, and the proposition is to have a common road bed for both roads from the intersection of the Memphis & Little Rock road to Helena. The following are Directors of the Iron Mountain & Helena Railroad Company: H. T. Coolidge, J. S. Horner, J. M. Hanks, Q. K. Underwood, and J. C. Maccabe, of Phillips county; J. S. Izard, J. W. Mallory, of St. Francis county; D. C. Cross, Cross county; J. M. Steele, W. W. Stansberry, Poinsett county; Jas. A. Burke, Craighead county; L. L. Mack, Green county. The officers are, D. C. Cross, President; J. C. Maccabe, Secretary; J. S. Horner, Treasurer.

Pennsylvania & Sodus Bay.

The company was first organized at Ovid, N. Y., on the 22d ult., by the election of a board of directors. The stock has all been subscribed, and ten per cent. paid in. The road is to be 100 miles in length, extending from Waverly, via Trumansburg, Ovid, Seneca Falls and Waterloo, to Great Sodus Bay.

Western Maryland.

Awards of contracts for building this road from its present terminus, 44 miles from Baltimore, to Hagerstown, 36 miles, will be made at the next meeting of the directors.

Memphis & Little Rock.

The Little Rock *Republican* says: "The connecting link was to have been finished July first, and trains running through from the Arkansas to the Mississippi rivers, but that hope has vanished, and, it is said, twelve months will elapse before the connection will be perfect."

Decatur & Chicago.

According to a dispatch from Springfield dated the 2d inst., the contract between the Directors of the Toledo, Wabash & Western Railroad Company and the Directors of the Decatur & East St. Louis Railroad Company for the building of the extension of the latter road from Decatur to Chicago by the first-named company, was finally consummated, and the work will be commenced immediately and pushed to an early completion.

Marietta & Cincinnati.

The stockholders have voted to accept the provisions of the recent law of Ohio, allowing bonds to be issued with power to vote. They also ratified the previous action of the directors, authorizing the issue of \$3,000,000 third mortgage bonds, with the powers to bondholders contemplated by this law.

Cape Cod Railroad.

Contracts have been let for extending this road from Orleans to Welfleet, 11½ miles. The work is to be completed by the 1st of October.

Northern Pacific.

The President advertises that bids for the grading, bridging, masonry, and ballasting of the road from the Dalles of the St. Louis river (a few miles west of Duluth) across Minnesota to the Red River of the North will be received at the company's office, No. 120 Broadway, New York, until the 1st of June.

The Minneapolis *Tribune* of the 1st says: "The survey work on the Northern Pacific Railroad line across the State is now said to be done, and the full details will be made public soon. It is positively ascertained, however, that the line will strike the Red River of the North above Georgetown. It is intended that this line shall be finished as far as Red River—230 miles—by January 1, 1871. The German capitalists who have taken the burden of this construction on their hands, are in New York, and are there to advance all the money necessary to do all the work that is to be done under this proposal. Preparations are making to push the surveys and locate the permanent line beyond the Red River."

South Pacific.

This road was formally opened as far as Springfield on the 3d inst., with an excursion from St. Louis.

Chicago to Pittsburgh.

The Cumberland *Transcript* says that surveys are being made through Ohio, by way of Canton, for a route direct to Chicago, in connection with the Pittsburgh & Connellsville Railroad, which will give the most direct line in the country from Chicago to the seaboard.

New Jersey Midland.

The New Jersey, Hudson & Delaware, and the New Jersey, Hudson & Sussex Valley Railroad Companies have been consolidated under the title of the New Jersey Midland Railway Company.

Indianapolis, Bloomington & Western.

The track was laid into Bloomington on Sunday, making the line now complete from Pekin to Danville.

Albany & Susquehanna.

The stockholders of the company have resolved to ratify the lease of the road to the Delaware & Hudson Canal Company.

Michigan Air Line.

The Jackson *Citizen* has been authorized to announce that the Michigan Air Line Railroad has not passed into the hands of the Michigan Central Company, as was reported a week ago. It is thought, however, that an arrangement will be made between the two companies, whereby the Central will run its fast trains over the Air Line from Jackson to Niles, and that the Air Line Company will in return receive certain rights enabling it to use the Michigan Central track from Niles to Chicago. This is the only contract expected to be made between the two companies, and it is probable that the arrangement will be consummated very soon. Over 1,000 men are now employed on the route of the Air Line, the largest force being on that portion lying between Jackson and Niles. A large number are at work grading between Jackson and Pinckney, and the latter is being prosecuted with vigor in the townships of Waterloo, Lyndon and Unadilla, while iron is being laid west of Romeo. Track-laying will be commenced in a day or two at Three Rivers, and the iron will be laid towards Jackson. Brighton, Livingston county, has just voted \$12,000 aid.

Norfolk & Great Western.

This road is to extend entirely across the State of Virginia, near the southern boundary, from Norfolk, through Danville, to Bristol. A director, who has lately returned from making negotiations in New York, says that the negotiations have been successful, and every mile of the road is now under contract, and that work will be commenced on it in a very short time.

Spyten Duyvil & Port Morris.

The contract for building the railroad from the Hudson River Railroad at Spyten Duyvil to its proposed junction with the Harlem Railroad at Mott Haven, about a quarter of a mile north of the Harlem river, has been awarded to Mr. Nicholas Decker, who is to complete the work by the 1st of March, 1871.

Atsion & Greenwich Point.

The work on the new railroad from Atsion, in Burlington county, N. J., to the Delaware at Greenwich Point, is rapidly progressing. Three sets of men are grading it at three different points. It crosses the Atlantic track at Winslow, and extends southeast through Vineland and Brighton to the Delaware.

Chicago & Southwestern.

From May 11 to May 18 bids will be received for the earth graduation and masonry of the second division, extending from Fairfield southwestward about twenty-five miles. Profiles and estimates can be seen at the office of S. M. Seymour, Chief Engineer, at Fairfield, Iowa. The bids will be received in Chicago at the office of the Chief Engineer of the Chicago, Rock Island &

Pacific Railroad. Proposals may be made for separate sections of four miles.

Union Pacific.

One telegram from Washington this week affirmed that the United States Senate had annulled the Territorial laws of Wyoming, "under which the present courts of the Territory assume jurisdiction to appoint a Receiver of the Union Pacific Railroad in the suit of Jas. W. Davis for ties furnished the road. This action was in consequence of information from Cheyenne, that Judge Howe proposes to order a Receiver unless the company pay the sum demanded, or deposit in court \$5,000,000 as security for any judgment Davis may render." The next day came a telegram from Cheyenne saying that "the statements that the Court of Wyoming has assumed jurisdiction to appoint a Receiver in the case of Davis vs. the Union Pacific Railroad Company, under and by virtue of the Territorial laws of Wyoming, is without foundation. Judge Howe is entirely ignorant of said laws, and has never proposed to appoint a Receiver, unless \$5,000,000 is deposited with the court. Said cause is in process of adjustment upon known principles of equity jurisdiction, to the entire satisfaction of both parties."

MECHANICS AND ENGINEERING.**Do Locomotives Ever Die?**

A correspondent of the *Scientific American* writes: "From what I have seen I am led to believe that locomotives are kept in use till they are killed. Their weak and corroded shells are unable to withstand the pressure put upon them, and they finally explode, killing and wounding the attendants. Then the responsible parties are wont to put on an innocent, mysterious cast of countenance, and ejaculate, 'What an unaccountable mystery are these steam boiler explosions!' About three years ago a locomotive boiler exploded on the Richmond & Petersburg Railroad. It had been in use only about eighteen years. Soon after one on the Virginia & Tennessee road only about sixteen years old. Two years ago I saw one within five minutes after it exploded, in Chattanooga, Tenn. The break was along the edge of the lap in the centre sheet of the bonnet, and on the bottom at this point the iron was only about one-eighth of an inch thick, with deep blotches of corrosion up to the water line, but deeper and clearer near the bottom. The boiler had been in use only about sixteen years. I have since seen another that exploded on the Virginia & Tennessee road. In this case the engineer refused to go longer on the machine, knowing that it was unsafe. He was discharged, and a green engineer put in his place. The result was that, within an hour, he and his fireman, and the engine, were torn into fragments. It is hardly necessary for me to write that the Superintendent of motive power was not tried for murder, and this scrap-heap was only about eighteen years old. Within a few weeks an engine exploded on the Chesapeake & Ohio road; the first point of rupture was along the edge of the longitudinal seam of the center sheet at the bottom of the bonnet; the piece taken out increased in width to the top, along the first point of rupture. The iron was not over the eighth of an inch thick, with deep blotches and furrows of corrosion; the boiler had been in use nearly eighteen years; the stay-bolts were badly worn; the fire-box in none too good a shape; and yet the boiler is being repaired by putting a new bonnet to the old firebox. I hope others of your many readers will communicate the facts bearing on this subject, with a view to ascertain at what age of continuous use locomotive boilers are dangerous by reason or corrosion."

Bridge Test.

The new bridge of the St. Louis, Vandalia & Terre Haute Railroad Company over the Wabash river, was lately tested by placing three engines on each single span. They occupied 140 feet space and their gross weight was 161 tons, equivalent to 1 1-7 tons per foot. The greatest deflection was 1¼ inches scant and the least 1¼ inches, which is a most satisfactory showing.

The International Bridge.

The Toronto *Globe* of yesterday has an article upon the contemplated International Bridge across the Niagara River from Buffalo to Fort Erie, and expresses its gratification at the prospect of the immediate commencement of the enterprise. The *Globe* remarks that all difficulties have now apparently been surmounted, through the exertions of parties in England interested in the success of the Grand Trunk Railway. By their intervention, it says, the stock of the International Bridge Company has been subscribed, and Messrs. C. S. Gzowski & Co., of Toronto, have been entrusted with the practical execution of the work. The cost will somewhat exceed a million of dollars. The point of departure is below the village of Fort Erie, on the Canada side. The Bridge crosses Squaw Island, and also the Erie Canal. It is to be a permanent structure of the most solid kind,

equal in all respects to the Victoria Bridge of Montreal, which it will exceed, if not in length, in the depth of the water in which its foundations will be placed. The piers and abutments are to be of solid stone, with iron or wooden casing filled with concrete. The water varies, but is forty feet at the deepest point. In the centre of the river there is to be a draw-bridge to turn upon a pivot which will leave one hundred and eighty feet open on each side, of clean passage room. There will be another draw-bridge across the canal.

The *Globe* further remarks that, "The iron is to be wrought, and there is to be accommodation for common carriages as well as railways. The bridge will afford opportunities for the exercise of Mr. Gzowski's great engineering skill, and the progress of the work will be watched with attention by all interested in great mechanical processes. The bridge will afford large facilities to the Grand Trunk Railway for carrying the traffic from Detroit to Buffalo, and will be a great boon to the latter city."

As previously announced, the stockholders of the American and Colonial companies will meet at the Mansion House in Buffalo, on the 18th of May, to take action for the consolidation of the two corporations. Without doubt a favorable result will be reached.—*Buffalo Commercial Advertiser*.

Road Locomotives.

Sir Joseph Whitworth, at a recent dinner of the Foremen Engineers, deprecated the use of horse tramways as unsuited to the times. He further intimated his opinion that "mechanical engineers have a right to enter their protest, considering the many obstructions there have been for many years past to the employment of road locomotives." Sir Joseph thinks it quite possible to produce a small, light locomotive, which would work quietly and effectively for use on roads; but, as a preparatory condition, he recommends that the roads should be better made, and kept in a proper state of surface by the use of steam-rollers, steam-sweeping, and other appliances.

Free Rail Joints.

A correspondent of the *Scientific American* describes as follows a method of tracklaying which has given great satisfaction on that portion of the Nashua road where it has been adopted: "No chair is used, and there is no sleeper directly under the rail joints; but in addition to the usual simple and strong four-bolted 'fish joint,' two 'broad-faced sleepers' are employed, close together, and so as to bring the ends of the abutting rails between them. This arrangement insures a free and open joint 'by allowing all dirt and clogging material to fall out, which of course leaves the opening free to its legitimate purpose, the expansion of the rails. The base of each rail is notched about midway for the reception of a spike to hold the track in its longitudinal position, and to bring the expansion of the rail each way from its centre."

"One of the chief causes of the derangement of railway track is doubtless the clogging up of rail joints; rails will expand and contract, and whatever opposes such expansion and contraction sufficiently will throw the track out of line."

"The mere action of sun and frost causes a variation of about three feet in the length of every mile of rail; hence the importance of this provision for the unobstructed play of the rail endwise."

"If the track is laid during very warm weather, one sixteenth of an inch at each joint is ample; but if laid in cold weather, three-sixteenths of an inch is not too much to allow at each joint for each rod of track."

Great Passenger Depot in New York.

A magnificent passenger house is building in New York for the accommodation of the trains of the Vanderbilt roads the New York Central, Hudson River and the Harlem. It is to be entirely of iron and glass. The weight of iron to be used will be over 8,000,000 pounds. It will require 100,000 square feet of glass in the roof alone, and 90,000 square feet of galvanized corrugated iron to cover the roof. The entire length of the roof will be 633 feet, and it will be 199 feet 2 inches in width between the walls, and supported by thirty-two arched trusses, placed 20 feet 4 inches apart. This depot is intended to accommodate the trains of the Harlem, Hudson River and New York Central Railroads. The car house will have accommodations for twelve single trains, while, if it be necessary, double, or even treble, that number can be accommodated. It is expected to be open to the public by January, 1871.

Housatonic Bridge at Stratford.

The New York & New Haven Railroad Company is preparing to construct an iron truss bridge over the Housatonic River at Stratford, in the place of the present old wooden structure. The new bridge will be 1,000 feet long, and is expected to cost \$250,000.

A New Propeller.

The New York *Herald* describes as follows a new steam

propeller invented by Wm. F. Goodwin, of Metuchen, N. J., which was tried recently before a number of scientific men at Trenton, N. J.:

"The most novel feature in the new propeller consists in having the propelling wheel placed at the bow end of the boat instead of being at the stern. The boat is constructed in the form of a scow, with the sides straight and parallel and projecting in advance of the body of the boat, sufficiently to inclose the propelling wheel, made to float upon the surface of the water moving or vibrating round the surface shaft."

"It has been considered a well settled principle in navigation that the amount of water which a boat may displace is just the same, whatever may be her form, and that the motive power required to force the boat through the water can be diminished only by the employment of acute angles or sharp lines in the construction of her bow and stern. But this involves considerable expense, and diminishes the amount of storage room, besides lessening considerably the buoyancy of the boat. In like manner there is a vacancy created at the stern, which must be filled by the replacement of the water before the boat can proceed. It follows that the power required to effect this displacement and replacement of water must exist in addition to the power absorbed in overcoming the inertia of the boat itself and the friction of the water upon her bottom and sides. It is known by actual experiment that nine-tenths of the power used in ordinary steamboats are required to displace the water, while only the remaining one-tenth is sufficient to propel the boat after the water has been displaced."

"The preceding difficulties are all overcome in the new propeller. The projecting sides serve the double purpose of receiving the entire body of water to be displaced and confining it while acted upon and forced down by the wheel, conducting the water under the boat and at the same time preventing the commotion of water made by the wheel from communicating with the water on the outside."

ELECTIONS AND APPOINTMENTS.

—A. J. Hodder, of Celina, Ohio, and Thomas Wrightson, of Newport, Ky., were elected directors of Dayton & Cincinnati Short Line Railroad Company on the 29th ult., and Mr. Hodder was subsequently elected President in place of James Goodin, resigned. Mr. Wrightson is one of the proprietors of the *Cincinnati Railroad Record*, the proprietor of a large railroad printing establishment in Cincinnati and a Senator in the Kentucky Legislature.

—At a meeting, on the 19th of April, of the Directors of the Dubuque & Minnesota Railroad Company the resignations of Colonel R. B. Mason, Hon. E. H. Williams, H. B. Carder and Platt Smith were tendered, and the following persons elected in their stead: J. M. Griffith, S. T. Woodward, J. A. Rhomberg, William Andrew and John D. Bush.

The following officers were also elected: President, J. M. Griffith; Vice President, H. L. Stout; Treasurer, C. H. Booth; Secretary, Peter Klene, Jr.

—Under the provisions of Section 8 of an act entitled "An act to fund and provide for paying the railroad debts of counties, townships, cities and towns," in force April 16, 1869, Governor Palmer has appointed and commissioned the following persons as members of the Board of Directors of the Springfield & Illinois Southeastern Railroad Company: James Carroll, of Gallatin county; William H. Robinson, of Wayne county; William H. Hanna, of Clay county; John H. Priest, of Sangamon county.

PERSONAL.

—Thos. C. Durant, late Vice President of the Union Pacific Railroad, has given \$15,000 to the Albany Medical College.

—Colonel D. C. Houghton, of the Corps of Engineers, has been ordered to proceed to Chicago, to superintend the work of improving the harbors of Chicago, Michigan City and New Buffalo.

—Mr. Wendell Bollman has resigned the Presidency of the Western Maryland Railroad Company.

—N. D. Munson, Assistant Superintendent of the Burlington & Quincy Railroad, at Quincy, was seriously injured by the falling of one end of the Union Passenger Depot at Quincy, on the 2d inst.

—One report says that the "Tracy party," if successful at the coming Northwestern election (and it is universally conceded that it will be), will call Wm. B. Ogden to the presidency, while another says that Perry H. Smith will be the man. The *Milwaukee Wisconsin* says on this subject: "Mr. Mitchell took the Presidency of the Northwestern under strong pressure and against his own inclinations, and while he is not probably a

"party to the new programme, as above prognosticated, we have no doubt he will receive a respite from his present duties as President with great satisfaction."

The Pennsylvania Railroad Company in Maryland and Virginia.

George Alfred Townsend writes from Washington to the *Chicago Tribune* as follows:

Some very important railroad movements are being made in the vicinity of the Capital City, nearly all going to show a desperate struggle between the Baltimore & Ohio Railroad Company and its restless rival, the Pennsylvania Central, for the control of the trade of the South and Southwest. Mr. Garrett, of the Baltimore road, has exclusive connections with Western Virginia and the great valley of Virginia, but the Pennsylvania road has flanked him in the southeast and created a rival interest in the State of Maryland itself, by buying the charter of the Baltimore & Potomac road, which was originally granted to a set of private speculators by the Maryland Legislature, and then purchased from the incorporators by the Pennsylvania interest; this road, ostensibly a mere accommodation line for the western peninsula of Maryland, has developed into a part of a great trunk line from New York and the lakes to Norfolk and New Orleans. This it will accomplish by a steam ferry or tunnel opposite Aquia Creek, which will make it a link on the tide-water route from New York and Baltimore to Fredericksburg and Richmond. From Fredericksburg, meantime, a road has been graded for seventy miles towards Charlottesville, and this with its connections, will tap the middle and lower Valley of Virginia, and give a long link toward Cumberland Gap. Yesterday, ground was broken in the outskirts of Baltimore city for the great Junction Railroad which is to make this new Baltimore & Potomac line fast to the Northern Central Railroad, and thus you can see that in the course of another year the Pennsylvania corporation will have one long arm reaching to Omaha and Chicago, a foothold at New York, and thence, by Harrisburg, will control the nearest possible avenue by tide-water to the mouth of the Chesapeake.

The whole business of this Baltimore & Potomac charter has illustrated what long-headed craft and cunning can accomplish. First, the Bowies, Stones, and other folks in the sterile western neck of Maryland were induced to demand a railroad right for their convenience. Having secured a charter in spite of Mr. John W. Garrett, these isolated folks find themselves possessed of a right but not the means to have a road. They therefore fly in despair to the Pennsylvania Central people, and thus the Pennsylvania monopoly finds a sure foothold at last upon the sacred soil.

This contest, however, goes back still further. It was really fought out in the city of Pittsburgh, where the shippers and manufacturers were long in complete subjection to the Pennsylvania Central road, and had no power in securing low rates of freight eastward; they therefore made a terrific political fight in the legislature at Harrisburg and got Mr. Garrett's permission to finish the Connellsville road, which crosses the Alleghenies between the Youghiogheny and the Upper Potomac. It then seemed probable that the Maryland interest would be forever absolute over the whole region east of Cincinnati, and enjoy the profitable spoils of all traffic between the Ohio and Cumberland and the Atlantic. But revenge and avarice made it all the more necessary for the Pennsylvania Northern Central road to obtain an extension to the Potomac, and hence we see to-day the extraordinary spectacle, for the East, of three thousand men and a half a thousand horses tugging again to finish the Connellsville route before next Christmas, while about as many men are at work to unite the Potomac & Harrisburg road by the same time.

But Mr. Garrett is now compelled to tunnel around Baltimore also, and he is about to put a hole under the Patapsco, so as to increase his time from Washington northward. Next year the road from this city to Point of Rocks will be driven ahead with celerity, and Washington city will actually have a dozen railroads converging here in place of two. Thus the rivalry of two vast monopolies is working out good for this neglected part of the East, and, unless the Capital removal project makes haste, Washington will contain two hundred and fifty thousand people before 1880.

The more these monopolies overlap and overreach each other southeastward the more certain it seems that an inevitable destiny is to make Hampton Roads the site of the future great city of the South. Baltimore can be flanked northward and southward. Her steamship lines must put to sea by Hampton Roads, and to the same point will inevitably go all the products between Memphis and Louisville. Norfolk or its neighborhood seems destined to outstrip Baltimore, as Baltimore has already passed Philadelphia in commercial hopefulness. In vain do they dig and deepen in the inconstant channel of the Patapsco; no harbor on the Chesapeake save that at its mouth is reliable. Within ten years, if the country prospers, there will be such speculation in lots and water fronts around the foot of the Chesapeake that we shall think we are reading a leaf out of the early period of Chicago.

Not Duluth, frozen up half the year, is the true point for the attention of Eastern city-builders, for Chicago and New York have fixed the subject of the centres of the great Northern grain ellipse for all time to come. The Chesapeake and its rivers stand for three hundred miles across the way between the South and New York, and to the mouth of the Chesapeake all railroad bulk in cottons, sugars and Southern staples will gravitate.

—There will be a celebration at Baxter Springs, Kansas, Thursday, May 13th, in commemoration of the completion of the Missouri River, Fort Scott & Gulf Railroad to the Southern line of Kansas. Ample preparations will be made at Kansas City for guests; from that point they will proceed in one grand excursion train.



PUBLISHED EVERY SATURDAY.

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Editorial Announcements.

Correspondence.—We cordially invite the co-operation of the Railroad Public in affording us the material for a thorough and worthy Railroad paper. Railroad news, annual reports, notices of appointments, resignations, etc., and information concerning improvements will be gratefully received. We make it our business to inform the public concerning the progress of new lines, and are always glad to receive news of them.

Articles.—We desire articles relating to railroads, and, if acceptable, will pay liberally for them. Articles concerning railroad management, engineering, rolling stock and machinery, by men practically acquainted with these subjects, are especially desired.

Inventions.—Those who wish to make their inventions known to railroad men can have them fully described in the RAILROAD GAZETTE, if not previously published, FREE OF CHARGE. They are invited to send us drawings or models and specifications. When engravings are necessary the inventor is expected to furnish his own engravings or to pay for them.

Our Prospectus and Business Notices will be found on the last page.

THE LAKE SHORE ELECTION.

The result of the recent election, at which Horace F. Clark, the son-in-law of Commodore Vanderbilt and long a prominent director of the New York Central, was elected President in the place of Mr. Phillips, and John A. Tracy and Azariah Boody substituted for E. B. Phillips and J. H. Devereux in the directory, while Augustus Schell, long prominent in the Vanderbilt party, was chosen Vice President—the result of this election, we say, has surprised many, though for some time past the leaders of the Vanderbilt party, which has long controlled the road, have made no secret of their intentions.

At the election last June, after the consolidation of the different roads which make up the line between Chicago and Buffalo, the majority of shareholders were already in the Vanderbilt interest, but, apparently, not committed to Vanderbilt personally; that is, some who wished to adopt Vanderbilt's policy and act in harmony with the Vanderbilt companies did not care to consult Mr. Vanderbilt's personal preferences in the choice of officers. Then, as now, Mr. Vanderbilt's candidate was Horace F. Clark. Mr. Williams, late President of the Buffalo & Erie Company, was also a candidate, and was, and is, regarded as a Vanderbilt man. Neither of these could then secure a majority of the shares. Mr. Phillips could, and was satisfactory to both parties, and was consequently elected. Now the power of the Vanderbilt family is stronger, and they succeed in electing their candidate.

Perhaps the choice of Mr. Boody, the President of the Toledo, Wabash & Western Railway, as a director, is more significant than the election of Mr. Clark to the presidency. The attempt last fall to consolidate this road with the Lake Shore will be remembered. The terms of the consolidation were fully agreed upon by the directors at one time, but the plan seemed to lose favor every day afterwards until the day of the meeting of stockholders at which the proposition was to be accepted or rejected. At that time the current had so turned against it, and it was so certain that it would be defeated, that only a small fraction of the stock was represented at the meeting, and this, too, although the original plan had been modified materially in favor of the Lake Shore stockholders. The election of Mr. Boody gives color to the report that now this plan of consolidation will be revived and carried out—a report which has caused Wabash stock to rise nine cents on the dollar within a short time.

But there are other rumors which indicate something even more important, and that is, that the Lake Shore, with such branches as it has or may have, will be leased before the end of the season to the New York Central &

Hudson River Railroad Company, and that that company will then operate the road between New York and Chicago as one line, running trains through as the Pennsylvania now does. Indeed, the Lake Shore & Michigan Southern would be to the New York Central what the Pittsburgh, Fort Wayne & Chicago is to the Pennsylvania, giving it an independent connection with the Northwest, and a trunk to which may be attached branches innumerable from the Northwest, West and Southwest. In this light it is easy to see how the Toledo, Wabash & Western might be worth more to the "New York Central, Lake Shore & Chicago" than to the Lake Shore & Michigan Southern.

That is, it is more important to obtain a traffic for carriage from Toledo to New York than one from Toledo to Buffalo.

The Toledo, Wabash & Western would give the Vanderbilt party a line through from New York to Quincy, one from New York to Keokuk, and one very soon from New York to St. Louis. It would enable it to compete with the Pennsylvania in fields south of Chicago much more effectively than now, and it would give it an advantage for the growing business of Kansas and the Central West, and of the South and Southwest, which it could obtain only indirectly otherwise.

Whether the change in the Presidency will occasion any changes among the operating officers is not known. It has been reported that Mr. Phillips was offered a position as General Manager, but for the truth of this we cannot vouch.

Some have thought that a closer union between the New York Central and the Lake Shore portended a discrimination by the former against the Michigan Central, and such a conclusion is very natural. We do not think, however, that this will be true. Doubtless the Vanderbilt party would prefer to carry every thing between Chicago and Buffalo by its own line. Probably if the Michigan Central and the Great Western had to compete on equal terms with the Lake Shore for business from Chicago eastward, such a discrimination would be made. But the strength of the Michigan Central is in its Western connections—in the 1,500 miles of the "Joy roads" which bring it freight and passengers from the richest parts of Illinois, Iowa, Nebraska, Missouri and Kansas.

The New York Central cannot afford to drive away the traffic of this great and growing system of roads. Moreover, if it should attempt to do so, it would almost certainly create a rival in New York itself. The "Joy roads" can now have no good outlet, either to New York or Boston, except by the New York Central. But in a short time the New York & Oswego Midland will give nearly two-thirds of a new route, so that the building of a new road from the Niagara river to Oswego, about 150 miles, along the shore of Lake Ontario, would give a route to New York with easy grades and forty or fifty miles shorter than that by the New York Central & Hudson River line. To keep such a rival out of the field and to secure the traffic from the 2,400 miles of road which debouch at Suspension Bridge, the New York Central can afford to give the Great Western and the Michigan Central a fair field: they will expect and ask no favor.

RAILROAD RESTRICTIONS IN THE NEW CONSTITUTION.

There have been many propositions made in the convention now preparing a new constitution for the State of Illinois for restrictions on the methods of transportation and the tariffs of rates of railroad companies. Some of these, doubtless have been made purely for effect; but others have been urged by men of character and ability and were intended to provide against real or supposed abuses. And this is true of some propositions which must be regarded as unjust, ineffective, and often absurd. The truth is, the relations of the railroads to the community are altogether unsettled, and the most intelligent and well meaning man, especially if he has not made a special study of the business of transportation, gropes in the dark and makes sad blunders in his attempt to define and regulate these relations. What is felt generally and expressed plainly by them is their conviction that these relations will not regulate themselves.

The Committee on Railroad Corporations made a report in which it recommended the prohibition of the issuing of stock or bonds for which no money should be paid—that is the watering of the capital account—and also the prohibition of the consolidation of "parallel" and competing lines.

These recommendations seem not to have met with general approval. At least the only provision adopted as yet, so far as we know, is the following:

"Sec. 4. The General Assembly shall, from time to time, pass laws establishing reasonable maximum rates of charges for the transportation of passengers and freight on the different railroads in this State, and to enforce such laws by adequate penalties, and may provide for a forfeiture of their property and franchises. Railways heretofore constructed,

or that may hereafter be constructed in this State, are hereby declared public highways, and shall be free to all persons for the transportation of persons and property thereon, under such regulations as may be prescribed by law."

This section makes a somewhat formidable appearance; but a closer inspection will show that it is, like Shakespeare's tale told by an idiot, "full of sound and fury, signifying nothing." Its fault is that it makes no provisions which the courts can take cognizance of. The Constitution may provide that the members of the Legislature "shall" live moral and virtuous lives, talk no buncombe, receive no bribes, and ask no passes on the railroads. It may require that the Legislature shall pass a law prohibiting the sale of liquor; but if it should refuse to, what then? The courts cannot issue a writ of mandamus compelling the Legislature to pass such a law. What the Constitution prohibits the courts can take cognizance of, and if the Legislature or corporations do what it prohibits, the courts can restrain them.

The second part of the section, which provides that all railroads in this State "shall be free to all persons for the transportation of persons and property thereon, under such regulations as may be prescribed by law," is more definite, and doubtless was intended to give effect to Governor Palmer's suggestions in his late letter to the Bloomington Transportation Convention; yet it is hardly doubtful that the compelling of railroad companies to give the use of their tracks to everyone who might wish to put a train on it would be regarded by the courts as an infringement of the privileges granted to the companies by their charters, and consequently unconstitutional.

In this connection we may quote Section 15 of the Bill of Rights as adopted by the Constitutional Convention. It reads as follows:

"SECTION 15. Private property shall not be taken or damaged for public use without just compensation, nor shall deduction be made of benefits its owner receives in common with adjacent land owners. Such compensation, when not made by the State, shall be ascertained by a jury, as shall be prescribed by law. The fee of land taken for railroad tracks, without the consent of the owners thereof, shall remain in such owners, subject to the use for which it is taken."

This section will serve as a defence as well as a restriction of railroad companies. A public highway is a thing for public use, and the railroads are private property.

OUR CONTRIBUTIONS.

We call attention to the quantity and quality of the contributions in this number of the RAILROAD GAZETTE. And yet there is not so much as was intended, as a very interesting section of one of Mr. Latrobe's valuable lectures was crowded out after it had been set up; not by more important contributions, for we could not easily find such, but by articles which had been printed before we discovered how pressed we were for room.

The article headed "Time for the Continent" will doubtless attract attention by the novelty of its propositions and fix attention by the soundness of its views and its "art in putting things." We are glad to announce that the writer, an authority in his profession, may be expected to contribute frequently to the RAILROAD GAZETTE, chiefly on subjects connected with railroad mechanics and engineering. We are especially glad to find that this subject of time is attracting so much comment and obtaining so much discussion.

The article on "Tracklaying," by Wm. S. Huntington, is one of a series prepared by a veteran railroad builder who has had more than twenty years practical experience, and therefore knows whereof he speaks. Directions so minute, so carefully considered, and so practical cannot fail to be of value to all engaged in constructing and repairing railroads.

A correspondent gives some criticisms on our recent editorial on the "Warming and Ventilation of Railroad Cars," and, without doubt, makes some good points. We shall consider the matter further.

Another correspondent has something to say on railroad expansion, which will attract attention.

Last, but not least by any means, is the article on "Foreign Agencies," by "Paul Stork." The other articles by this writer have attracted very general attention among railroad managers, by reason of their boldness, directness, and more particularly, their independent opinions. The subjects treated of by him deserve the most searching examination and discussion. We hope those who disagree with "Paul Stork" will say so and give their reasons in the columns of the RAILROAD GAZETTE.

The publication of Mr. Latrobe's lectures will be resumed in the next number and continued regularly until they are completed. As a short, clear, and comprehensive sketch of the art of civil engineering, they must be valuable to all unprofessional men who wish to know something of the subject; and coming from Mr. Latrobe, eminent among the leading engineers of America, they carry an authority which such works do not often have. The next section treats of tunnels and bridges. Before

the series is concluded we expect from the author some discussions of the locomotive engine in addition to what is given in the lecture.

The Injunction Suit Against the Union Pacific.

The case of James W. Davis against the Union Pacific Railroad Company, asking that an injunction be issued and a receiver appointed for this company, was commenced before the Superior Court of the Territory of Wyoming at Cheyenne on the 26th ult. and was continued until the 30th. We give below the summary of the argument as reported by telegraph:

"The complainant claims that the allegations of his bill have been fully sustained, and that the most gigantic system of fraud in connection with the construction of the road has been disclosed; that the Directors and Trustees of the road, by cunning devices, succeeded in making a contract with Oakes Ames for construction, and on the same day having it assigned to themselves, is fraud of the rights of stockholders, and that the Credit Mobilier of America was used by the Trustees to conceal the device. On the hearing, the original stock of the Trustees of the Union Pacific Railroad owning shares of the Credit Mobilier of America, was produced, showing dividends paid in January, 1868, amounting to over \$7,000,000. Also the so-called triplicate agreement between the Credit Mobilier, Oakes Ames, and Trustees, to whom the construction contract was assigned by Ames. The contract between the railroad and Wyoming Coal Company, for furnishing coal for fifteen years at \$6 per ton was also produced, and it also appeared that the stock of the coal company was owned principally by the Trustees of the company. Complainant also claims to have shown that the railroad obtained bonds from the United States amounting to half a million of dollars, on representations that they owned the materials for which Davis seeks payment, and in view of all the facts in the case, both the railroad company and the contractors have become liable to him. The defence admit that great irregularities occurred in building the road but deny the jurisdiction of the court to grant relief in the case on various technical grounds. They deny that the Wyoming Corporation law is binding on the Court of Claims; that the corporation is solvent and, under able and judicious management, and to avoid the appointment of a receiver, tender bonds in the penal sum of \$1,000,000, conditioned for the payment of any judgment Davis may obtain. Counsel for complainant insists that the bonds are insufficient, and they are not bound to receive it.

A partial decision was rendered by Chief Justice John H. Howe, holding that a court of equity has jurisdiction of the case; that defendant, upon the showing, is responsible to complainant; that the affairs of the road have been so mismanaged in times past as to render it doubtful if it will be able to respond to satisfy any judgment the complainant may bring.

Owing to the vast interests involved, the Court was reluctant to appoint a receiver, but adjourned a few hours to give the defendant an opportunity to furnish adequate security in lieu of a receiver. The company's counsel took advantage of this opportunity and stipulated with the counsel for plaintiff to deposit in lawful money the amount claimed by plaintiff within twenty days as security for any judgment plaintiff may obtain. The Court was notified of this stipulation, and deferred entering judgment for twenty days.

NEW PUBLICATIONS.

King's Railway Directory for 1870-71 has lately made its appearance. It purposes to give an official list of the officers and directors of the railroads of the United States, with a short statement of the length, and the amount of rolling stock, gauge, capital stock, cost, and bonds of each, and in most cases the earnings and expenses for the last year reported. Such a work, it is easy to see, is very convenient and often almost indispensable; but its value is limited by its fullness and correctness. We have heretofore made frequent use of the manual and have found it exceedingly convenient.

We notice several omissions in the new edition. We fail to find in it anything concerning the Brunswick & Albany, which has fifty miles completed; the Chicago & Danville, which has been in operation for thirty miles for some months and is likely to be within a year a very important road; the Iowa Falls & Sioux City, which had seventy-five miles completed last fall; the Michigan Air Line, which has made a great deal of noise in the world and has about twenty miles of road in operation and a great deal more graded; the Peninsular of Michigan, which has nearly forty miles of road and much more road-bed; the Grand Rapids & Indiana, which has forty miles and more of road and great expectations; the Alabama & Chattanooga, with its ninety miles of road; the Macon & Augusta, on which the writer rode two years ago; the Columbia & Augusta, an important South Carolina railroad; the Blue Ridge Railroad, another South Carolina railroad, many years old; the important West Wisconsin; the Atchison, Topeka & Santa Fe, now twenty or thirty miles long;

the Missouri, Kansas & Texas, which has more than a hundred miles in operation; the St. Joseph & Denver, with its forty miles of completed road; the Fort Wayne, Jackson & Saginaw, which built more than fifty miles of road last year; the Pensacola & Louisville, and many shorter and newer roads. These we find missing after an examination of only part of the book.

The companies are given in alphabetical order so that it is easy to refer to each without looking them up in the index. It also has lists of members of the Master Car Builders' and the Master Mechanics' associations, and a very large number of advertisements of railroad supplies which are valuable for reference to many railroad men.

Appleton's Railway Guide for May arrived promptly on May day, a little too soon to get the summer time tables of the Great Trunk east and west lines, which, indeed, had only determined upon those time tables two or three days earlier. What we find new and especially commendable in this number of *Appleton's* is a revised and corrected map, which has a very large number of additions, and is unusually correct, as well as full. A railroad map, in these days, becomes superannuated in a month or two, and it is fortunate that *Appleton's* map, being engraved on copper, can be amended as the railroads increase and multiply, so as to be always up with the age.

The Hecaton Waltzes, recently published by Root & Cady, are among the pleasantest of the many pleasant compositions for which we are indebted to the popular composer, George Stevens, the leader of the orchestra at Alken's Museum. Mr. Stevens' talent as a conductor is manifest to all who patronize this pleasant theatre. He has made the music an attraction where it is usually deservedly unpopular. Mr. Stevens' compositions are especially favorites. The *Hecaton* is dedicated to the Hecaton Club of this city. It is graceful and beautiful in its movement, and does credit to the talent of the composer, and the taste of the public, which is buying it so largely.

Origin of the Northern Pacific Railroad.

A correspondent of the New York *Times* gives the following account of the projectors of the Northern Pacific Railroad.

Your issue of Saturday presents a letter from your special correspondent regarding the "breaking ground" on the Northern Pacific Railroad, in which letter Mr. Jay Cooke is styled the "Father of the Northern Pacific." Believing that honor should be given to whom it is due, I beg leave to state the facts. This Company was chartered in 1864, and its immense and valuable grants were donated in that year. Josiah Perham, of Boston, was the moving spirit in the enterprise, who, together with Thaddeus Stevens, Hon. George Briggs, member of Congress from New York, Hon. L. D. M. Sweet, of Maine, and a member of Congress from Minnesota, were instrumental in securing this franchise from the Government. The first organization of the Company included Mr. Perham as President, Hon. Geo. Briggs as Vice President, Israel S. Washington, of Boston, Treasurer, and Colonel W. S. Rowland as Commissioner. These gentlemen remained in control of the enterprise until January, 1866, when through the instrumentality of Colonel Rowland the control was passed to Hon. John Gregory Smith, of Vermont, who succeeded Mr. Perham as President; Hon. R. D. Rice, of Maine; Onslow Stearns, Governor of New Hampshire; Geo. Stark, of New Hampshire, and several gentlemen of Boston; and not until this year has Mr. Cooke become in any way connected with the Company. The first officers of the Company are all deceased except Colonel Rowland, who resigned his position some time since. That the connection of Mr. Cooke with the management of the Northern Pacific will aid vastly in the speedy construction of the road no one will doubt; but he must not be classed with those who from the beginning were the men who, in the face of great obstacles, successfully gave it birth and vitality. He will, beyond doubt, reap the harvest they showed, and the nation will be indebted to him as well as them.

REGISTER OF EARNINGS.

FOR THE MONTH OF APRIL.		
Illinois Central (965 1/4 miles) 1870.....	\$397,571 10	
" (896 miles) 1869.....	568,329 33	
Increase (5 1-6 per cent.).....	\$39,288 78	
Chicago & Alton, (463 miles) 1870.....	\$434,653 97	
" (431 miles) 1869.....	329,490 50	
Increase (3 per cent.).....	\$4,363 87	
(The 34 additional miles in 1870 were operated only two weeks of April.)		

—The Oregon Railroad Bill, which passed the House of Representatives on the 29th ult., indicates that there will be a change in the conditions of land grants to railroads hereafter. The grant to this road is but ten sections to the mile, instead of twenty as in most cases heretofore and it is required that the company's land shall be sold only to actual settlers, and to them at not more than \$2.60 per acre. Thus the proceeds per mile of the land granted cannot be more than \$16,000.

—Bills have passed in Congress granting lands for the Omaha & Northwestern Railroad from Omaha to the Missouri at the mouth of the Niobrara river and thence up the Missouri to a point near Fort Berthold, Dakota, on the line of the Northern Pacific Railroad. Twenty sections per mile for 1,000 miles are granted. Aid was granted to the Oregon Branch of the Pacific Railroad Company to connect with the line of the Northern Pacific.

The New York Pneumatic Tunnel.

George Alfred Townsend in a recent letter to the Chicago *Tribune* put in a good word for the pneumatic tunnel as follows:

I made a visit to the pneumatic tunnel, under Broadway, New York, on Wednesday. It seemed to me to be a complete success, notwithstanding the evil predictions, and the bigoted and corrupt opposition which it had to encounter. Descending into a basement saloon, some twelve feet below the pavement, I paid a quarter of a dollar admission, and passed on to a still deeper saloon, which was kept light as day by jets and chandeliers of a new oxygen gas. Here, at thirty feet underground, the air was pure and refreshing as out of doors. In the first saloon through which I had descended, stood the immense machine used to exhaust air in the tunnel. The lower saloon was a handsome railway station, beautifully finished, and carpeted, with conveniences of all sorts for the use of passengers, and along the walls were pictures of the many successful pneumatic railways of Europe. The tunnel opened directly out of the second saloon, a few feet deeper, and the car for carrying passengers stood at the siding; a more comfortable car could not be imagined; it gave seats to twenty persons, and was lighted by a patent oxygen lamp. The first sixty or a hundred feet of the tunnel was a bold curve, and this portion was braced up with air-tight iron cylinders, painted white, like the rest of the shaft, which is filled in with brick. After turning the curve, the view afforded of a quarter of a mile of lamps, reaching straight beneath Broadway, and revealing hundreds of pedestrians—men and women—walking so deeply and securely beneath the mid-day roar of the street, was peculiar and picturesque. The rumble of the wagons above was distinctly heard; but the smell of the place was so sweet, and it was so perfectly firm and dry, that I wished myself able to go to the Battery by this new route, rather than by the slippery, muddy, and overcrowded pavements at the surface.

The height of the tunnel seemed to be eight or nine feet. It completely puts to rout the old notion that New York Island, or any other city's foundation, cannot be successfully pierced by tunnels.

I was wonderfully impressed with the superiority of the American citizen over his ruler, when, in the railway station, I saw printed the appeal:

"Please sign the books of petition to the Legislature to allow us to carry passengers."

Invention, science, capital and industry have nobly coalesced to work out the problem of this underground highway, while the rapacious harpies of the City Hall ring and the State Legislature refused to the last to give these the privilege of transit unless they should purchase it with money or stock.

Reduction of Railway Fares.

It is estimated that from one-tenth to one-fifth of the travel over our railways is on free passes or dead-head tickets. Whoever is employed on one road, and, generally, most of his relatives and his wife's friends, are free over every other; all shippers of even a very moderate amount of freight; all friends of ticket agents and conductors; members of Congress, of Legislatures, and City Councils, and their friends, and prominent officers of State, national and city governments; editors, reporters, correspondents, and people who have a habit of visiting newspaper offices; and, finally, Judges and officers of courts; hotel proprietors, and their clerks and families; proprietors of stage lines and livery hacks; to say nothing of people who have philanthropic, charitable, or religious missions, and who have been solemnly called and ordained to go around at other people's expense and stir up things. With such an extensive list of dead-heads, consuming at least one-eighth of the revenues of most railroads, it is impossible, on the one hand, to get any impartial action relative to railroads from a community so universally bribed, and, on the other, it is not easy for the railroads themselves to exercise the economy necessary to reduce fares when their best cars are full of dead-heads, and none but poor men pay their fare.

Another 10 per cent. is lost in commissions on all fares sold at offices, other than the depot, and a smaller fee on all fares received from passengers who are brought to a depot by hackmen and runners. These expenses of competition burden every railroad company on competing routes with a standing army of agents, advertising strikers, publishers of railroad journals which have no circulation to make the advertisements in them of any value, ornamental bill manufacturers and posters, the entire waste of expense upon which may be summed up at 10 per cent. on their gross fares. These expenses are as idle and useless as the standing armies of Europe. The more one competing road wastes upon them, the more the others must, and the less one road expends, the less the others need.

If 10 per cent. be a fair allowance for each of these sources of waste, then we have in both combined a waste of one-fifth, or, in other words, a reduction of one-fifth in fares could easily be made if all roads would agree to shut off these needless expenses and stand by their agreement.

If, at the same time, the railroads would boldly reduce the rates of fare below the present paying point, relying on the large increase of travel that would result to make up the difference; if, for instance, they would reduce fares from New York to Chicago from \$25 to \$15, one-half of the reduction would be made up by the cutting off of useless expenditures, and the other would very soon be compensated by the enormous increase of travel to which such a reduction, if simultaneous and general, over all roads, would give rise. Will not some of our enterprising Chicago railway managers take hold of this reform energetically, and see why things that have been done in England and Belgium, cannot be done on a much grander scale in the United States?—Chicago Tribune.

Chicago Railroad News.

Chicago & Northwestern.

The following circular was issued lately by H. P. Stanwood, General Ticket Agent:

"From and after this date, this company will issue excursion tickets from Chicago to San Francisco and return, as follows: For parties of 20 to 24 passengers, \$204; 25 to 29, \$198; 30 to 34, \$192; 35 to 39, \$186; 40 to 44, \$180; 45 to 49, \$174; 50 to 99, \$156; 100 or over, \$150.

"The above rates are for first class passage only. Sleeping berths charged extra. Pullman's celebrated sleeping cars are run on all trains. A Pullman hotel train leaves Omaha for San Francisco every Thursday, over the Union and Central Pacific railroads, and a Pullman dining car is run daily on this road. The cost of a double berth each way is about \$17, and excellent meals are furnished along line of road, at from seventy-five cents to one dollar. Due notice should be given of the starting of such parties, that suitable arrangements may be made for their transportation, and sleeping or dining cars secured.

"Tickets good from 30 to 60 days, as may be desired."

A new time-table has been made for the Milwaukee and Wisconsin divisions, to go into effect next Monday. Two additional trains are put on the Milwaukee and one on the Wisconsin Division.

On the Milwaukee Division one new train is a mail, which will leave Chicago at eight in the morning and reach Milwaukee at noon. Returning it will leave Milwaukee at 6:30 a. m. and arrive in Chicago at 10:15 a. m., making the run in three hours and three-quarters—pretty good time for a mail train. This train gives ample time for passengers to take the fast trains for the East which leave at eleven o'clock. The other new train on this division is an Evanston accommodation, leaving Chicago at 11:40 a. m. and arriving in Evanston at 12:15 p. m.; leaving Evanston at 1:15 p. m. and arriving in Chicago at 1:50 p. m.

The changes in time of the old trains on this division are as follows: the Waukegan passenger leaves at 6:15 p. m. instead of 6:10; the express at 10:00 a. m. instead of 9:45. The night accommodation arrives at 5 instead of 5:45 a. m.; the day express at 8:00 p. m. instead of 7:30; the other express at 4:30 p. m. instead of 10:45 a. m.; the Waukegan passenger at 7:55 instead of 8:10 a. m.; and the Waukegan accommodation at 8:25 instead of 8:40 a. m.

On the Wisconsin Division the additional train is a Barrington accommodation, which leaves Chicago at 6:20 p. m. arriving in Barrington at 8:00 p. m.; leaves Barrington at 6:15 a. m., and arrives in Chicago at 7:45 a. m. This train stops at all stations and is intended especially for the accommodation of suburban traffic.

The changes in this division are in the arriving times of the Woodstock and Janesville trains. The Woodstock accommodation arrives at 10:10 instead of 9:00 a. m., and the Janesville passenger at 1:00 instead of 2:05 in the afternoon.

Pittsburgh, Cincinnati & St. Louis.

Thomas A. Scott, First Vice-President, and G. B. Roberts, Fourth Vice-President, of the Pennsylvania Railroad Company; and Thos. L. Jewett, President, and Hugh J. Jewett, First Vice-President, and D. S. Gray, General Manager, of the Pittsburgh, Cincinnati & St. Louis Company, arrived in the city last Thursday from St. Louis. Their journey may plausibly be considered as an inspection of the latter company's leased roads, and especially of the new air-line from Terre Haute to St. Louis (the St. Louis, Vandalia & Terre Haute), which is but just completed and will give the Pennsylvania a very direct line from St. Louis to New York, Philadelphia, and Baltimore.

Michigan Central.

This road and the Great Western have stood the severe test of the fast train between Chicago and New York with great success. The Great Western has heretofore been the obstacle to making time regularly, but under the new management and with the late improvements it bids fair to equal any other section of the line. It has missed no connection since the Train Dispatcher commenced running the trains, a month ago; and on one occasion, when an accident to a freight train delayed the fast train an hour and twenty minutes, at Komoka, near the middle of the line, the time was made up before reaching the end of the road and the connection preserved. On this occasion the train at times ran at the rate of fifty miles an hour.

Chicago, Burlington & Quincy.

There is a heavy freight movement westward on this line—so heavy that it is difficult to provide cars enough for it. In the other direction the movement is moderate, but grain is beginning to come forward.

Personal.

Thomas L. Kimball, the General Western Passenger Agent of the Pennsylvania Railroad, started for California early this week. The Pacific coast was added to the territory in Mr. Kimball's charge several months ago.

R. E. Farnham, lately an engineer of the Chicago & Northwestern Company, and a civil engineer of marked ability and skill, has established an office in this city at Room 1, No. 115 Madison street.

George C. Morgan, late Division Engineer of the Pittsburgh, Fort Wayne & Chicago Railway, has established an office in this city with A. Van der Naillen, for the practice of general civil engineering.

Wm. M. Larabee, Secretary and Treasurer of the Chicago

& Alton Railroad Company, has removed from Geneva, Ill., where he has resided for thirteen years past, to Chicago.

It is reported that the presidency of the Boston & Albany Railroad Company has been, or will be, offered to E. B. Phillips, late President of the Lake Shore & Michigan Southern Railway Company.

Illinois Central.

The report of land sales and earnings for the month of April is as follows:

LAND DEPARTMENT.			
Acres Construction Lands sold.....	5,971.85 for	\$47,758 67	
Acres Interest Fund Lands sold.....	159.33 for	1,656 17	
Acres Free Lands sold.....	40.00 for	568 00	
Total Sales during the month of April, 1870.....	5,471.18 for	\$49,979 84	
To which add Town Lot sales.....			

Total of all.....5,471.18 for \$49,979 84

Cash collected in April, 1870.....\$155,856 70

ESTIMATED EARNINGS—TRAFFIC DEPARTMENT.

	In Illinois	In Iowa	Total.
Freight.....	707 miles.	258 1/2 miles.	965 1/2 miles.
Passengers.....	\$239,247 00	\$33,138 00	\$342,385 00
Mails.....	138,968 70	38,444 40	\$171,511 10
Other Sources.....	6,375 00	1,029 08	7,404 08
	74,000 00	1,970 92	75,970 92
Total April, 1870.....	\$509,984 70	\$34,566 40	\$597,571 10
To 1 Actual Earnings, April, 1869.....	477,539 95	90,700 27	568,240 22
Increase, 1870.....	\$32,444 75	\$43,866 13	\$76,310 88

Chicago, Rock Island & Pacific.

The following changes in the time table are announced to take effect next Sunday (May 8):

The Peru Accommodation will leave the La Salle street depot at 5:00 p. m., instead of 4:30.

The Pacific Express will leave at 10:00 p. m., instead of 11:00.

The Pacific Express, day train, will arrive at 3:35 p. m., ten minutes later than formerly.

The Pacific (night) Express will arrive at 6:00 a. m., instead of 7:00.

During the past week a telegram stated, on the "best authority"—and we learn that it is entirely without authority—that the company had made arrangements to run through passenger and freight cars from Chicago to St. Louis; between Peoria and Jacksonville, over the Peoria, Pekin & Jacksonville line; thence by the Toledo, Wabash & Western road to Chapin; and thence by the Rockford, Rock Island & St. Louis Railroad to St. Louis.

No such arrangement has yet been consummated, and probably will not be, very soon at least.

Pittsburgh, Fort Wayne & Chicago.

The fast train on this line makes its quick time without any remarkable increase in the rate of speed, by eliminating stops. Only two are made between Chicago and Crestline, one at Plymouth, seventy-four miles, for dinner, and one at Fort Wayne, 148 miles, to change engines. On the eastern division the stops are more numerous, but in Pennsylvania very remarkable runs are made, so that only two stops are made in the 352 miles between Pittsburgh and Mantua Junction, where the train is switched on the Camden & Amboy line. These stops are at Altoona and Harrisburg, making the runs 116, 132, and 104 miles respectively. Moreover as the whole train with the baggage car runs through, there is no delay at Pittsburgh to change baggage. Thus the train makes the trip to New York in thirty hours, without any remarkable—and disastrous—rate of speed. The train from Chicago, leaving at eleven in the forenoon, arrives in New York at six the next afternoon. Returning, the train leaves New York at seven in the morning, and reaches Chicago at three o'clock the next afternoon.

The long run between Harrisburg and Altoona, 132 miles, has been made during the past week with one tank of water, probably a longer run than ever made before in America, and surpassed only in England on roads where the locomotive takes up its water as it moves along.

Freight Rates.

Rates to New York have recently been reduced from 45 to 40 cents on fourth class and grain in bulk. We give the following quotations to some leading Eastern points:

CHICAGO TO			
	4th class per 100 lbs.	Grain in bulk.	Cured meats in bulk.
Boston.....	45	90 50	55
New York.....	40	80 40	50
Philadelphia.....	40	80 40	50
Harrisburg.....	40	80 40	50
Baltimore.....	40	80 40	50
Pittsburgh.....	35	50 35	30
Bridgeport.....	30	60 35	35
Wheeling.....	35	70 ..	40
Springfield.....	30	60 30	..
Buffalo and Suspension Bridge.....	29 1/4	65 32 1/4	35
Montreal.....	35 1/4	110 05	65
Toronto.....	35 1/4	65 32 1/4	37 1/4
Albany.....	50	100 55	60
Cleveland.....	29 1/4	45 32 1/4	30
Cincinnati.....	35	50 35	35
Columbus.....	35	50 35	30
Louisville.....	29 1/4	45
Dayton.....	35	50 35	30
Oil City, Pa.....	60 1/4	130 60	..
Corry, Pa.....	47 1/4	90 47 1/4	..
Akron, O.....	35	60 35	..

This makes the rate on wheat to New York 24 cents per bushel, and on corn 22 1/4 cents.

Lake Shore & Michigan Southern.

Of course the election of last week is the absorbing topic in connection with this road. The directors as elected are Horace F. Clark, Alanson Robinson, James H. Banker, An-

gustus Schell, William Williams, Henry B. Payne, Amasa Stone, Jr., Stillman Witt, William L. Scott, Milton Court-right, John A. Tracy, Azariah Boody, and Albert Keep. Of these all except John A. Tracy and Azariah Boody were re-elected. These two succeed E. B. Phillips and J. H. Devreux.

The officers elected are as follows:

President, Horace F. Clark, of New York; Vice President, Augustus Schell, of New York; Treasurer, James H. Banker, of New York; Secretary, George B. Ely, of Cleveland; Auditor, C. P. Leland, of Cleveland.

The new time schedule works well on this road, and the fast train is becoming a favorite.

Baggage-Masters' and Brakemen's Convention.

The second annual convention of delegates from various roads of the United States Baggage-Masters' and Brakemen's Life Insurance Association assembled at Crosby's Music Hall in this city on last Thursday.

The officers present, elected at the last annual meeting, were:

President, F. Wallington, Michigan Central Railroad, Detroit; Vice President, J. Glading, Philadelphia, Wilmington & Baltimore Railroad, Philadelphia; Secretary and Treasurer, J. G. Rodgers, Detroit & Milwaukee Railroad, Detroit.

The Rev. Mr. Sweet of the Church of the Epiphany opened the proceedings with prayer, after which the President congratulated the young association on their success and prosperity and made some very sensible remarks on the relations existing between baggage-masters and brakemen.

A Committee on Credentials was then appointed who reported the following delegates entitled to represent their respective roads:

Ed. Sherlock, Lafayette, New Albany & Chicago, New Albany; W. F. Allen, Hannibal & St. Joseph, Quincy; J. N. Fornot, Cumberland Valley, Chambersburg; J. D. Fox, Chicago, Rock Island & Pacific, Chicago; B. M. Henshaw, Indianapolis & St. Louis, St. Louis; H. B. Brooks, Chicago & Northwestern, Chicago; A. Bunce, Cleveland & Pittsburgh, Cleveland; N. Kern, Detroit & Milwaukee, Detroit; M. Lotterkous, Michigan Central, Detroit; Ed. Martin, George Snyder, Pennsylvania Railroad, Philadelphia; S. M. Jackson, Evansville & Crawfordsville, Evansville; C. C. Eckenbrine, Philadelphia, Germantown & Norristown, Philadelphia; J. Glading, Philadelphia, Wilmington & Baltimore, Philadelphia; John Hoyland, Pittsburgh, Cincinnati & St. Louis, Columbus; Charles Kalsey, Jackson, Lansing & Saginaw, Zilwaukee, Mich.; J. Richards, Great Western of Canada, Detroit; C. L. Corneau, Toledo, Wabash, & Western, Danville, Ill.; John Buckley, Illinois Central, Dunleith; J. M. Burns, Toledo, Peoria & Warsaw, Warsaw; H. W. Earley, Pacific of Missouri, St. Louis; W. S. Plummer, Pennsylvania Railroad, Tyrone; L. D. Hibbard, Terre Haute & Indianapolis, Indianapolis; C. A. Topliff, Lake Shore & Michigan Southern, Toledo; J. T. Milan, Louisville, Cincinnati & Lexington, Louisville; S. Kelsey, Grand River Valley, Jackson, Mich.; E. M. Gillespie, Baltimore & Ohio, Columbus; F. E. Brackett, Milwaukee & St. Paul, Minneapolis; D. M. Christie, Milwaukee & St. Paul, Milwaukee; John Willis, Milwaukee & St. Paul, Prairie du Chien; W. C. Dickinson, North Missouri, St. Louis.

The President, in his address, which followed, presented several questions which had come up during the year for the consideration of the Convention.

The Secretary then submitted his annual report, giving a gratifying statement of the prosperous condition of the Association. The total number of roads enlisted up to May 5 was 45, representing 675 members. The amount received to date, for entrance fees and assessments, was \$952.00. The expenditures for printing, &c., and assessment paid to the family of George Lamb, a deceased member, amounted to \$448.

A committee of six was appointed to report a revision of the Constitution and By-Laws, and the afternoon session was consumed in its discussion. The Convention assembled again yesterday morning to complete the work.

—Two engines on the Strasbourg Railway have been fitted with M. Deville's furnaces, for burning petroleum, and are employed in the goods traffic. The consumption of oil in the engines drawing heavy trains is stated to have been from three and a half to five kilogrammes for every kilometer traversed, or (say) from 8 lb. to 12 lb. for every two-thirds of a mile. The oil is said to be very completely burned, and there is no smoke and consequently no waste. Another advantage claimed is, there being no sulphur in the oils the atmosphere of the tunnels would be free from that most disagreeable and obnoxious contamination, sulphurous acid.

—The Chattanooga Times of the 28th says: "Mr. H. Brazier, the Assistant Superintendent of the Rolling Mill, was endeavoring, yesterday, to obtain laborers to 'repair the railroad tracks, &c., about the mill, but had very poor success. Laborers are very scarce here, being all absorbed by the Atlanta & Chattanooga Railroad. As soon as a force of hands can be obtained, 'work will be commenced.'"

—The Jackson Citizen and Lansing Republican urge the immediate calling of an extra session of the State Legislature if the Michigan Railroad Aid law should be declared unconstitutional by the Supreme Court, so that an amendment to the constitution, giving the power to municipalities to vote aid, can be submitted to a popular vote at the general election next fall.

Taxation of Railroad Lands and Improvements.

Judge Sidney Breese of the Illinois Supreme Court recently rendered a decision in the appeal case of the Chicago & Northwestern Railway Company vs. the Board of Supervisors, of Lee county, in which the Lee county Circuit Court decided that in the assessment of the property of the company the value of the improvements might be included with that of the land. The material portion of the decision was as follows:

This case differs from the case of The Board of Supervisors of Bureau County vs. The Chicago, Burlington & Quincy Railroad Company. The difference is presented by the first point argued by appellants, and that is, that, under the revenue laws of 1855, the real estate or "land" of a railroad company can be valued only as land, without regard to the cost of fitting it for use as a railroad, or preparing it for receiving the track and superstructure. That it can only be valued as land by superficial measure, like other lands in that place and neighborhood.

The statute declares that the real property owned or occupied by a railroad company in each county, town and city through which it may run, and the actual value of each lot or parcel of land, including the improvements thereon, except the track or superstructure of the road, shall be annexed to the description of such lot or parcel of land. Such list must set forth the number of acres taken for right of way, stations, or other purposes, from each tract of land through which the road may run, etc., giving the width of the strip or parcel of land, and its length through each tract, also the whole number of acres and the aggregate value thereof in the county, town and city; all this property is denominated "real property."

The counsel for appellants insist that the land occupied as right of way and fitted for use as such, by grading, filling, culverts and bridges, should be assessed as land only, without regard to the work upon it.

We cannot concur in this view. The Legislature have declared that this strip of land shall be particularly described in the schedule, and, with the improvements upon it, shall be taxed at its value. There can be no doubt on this point.

An objection is made by appellants to the form of the verdict, they insisting that it cannot be executed.

So far as appellants are affected by it, there can be no doubt but a proper mode will be adopted by which the county authorities will dispose of the money when appellants pay it. This is all we think, which concerns them. The mode or manner in which the authorities may distribute it among the several towns concerns the county alone.

THE RETIRED CONDUCTOR.—"Gris," of the Cincinnati Times, relates of an old conductor promoted to train dispatcher as follows:

"Habit was extremely strong with the ex-conductor. As he sat in the office, he would start every time he heard a bell ring, and yell 'all aboard.' Then he would go about the office at intervals, and try to collect fare from his assistants. We dropped in casually one afternoon, and Billy wanted to know if we had a 'pass.' He couldn't get accustomed to his new position at all. He pined to be again on the road. One day he begged the boys to put him through a collision, which they did to his entire gratification. They tore his clothes nearly off, blacked both his eyes, broke a herosene lamp over his head, and piled a red-hot stove on top of him. Billy was in an ecstasy of delight, and declared he hadn't enjoyed himself so much since he had a 'bile.'"

—At a meeting of the Board of Directors of the Cincinnati, Hamilton & Dayton Railroad Company to-day, S. S. L'Hon-medieu was elected President; D. McLaren, Vice President and General Superintendent; F. H. Short, Secretary and Treasury. The remainder of the officers are the same as last year.

—The tolls on the Erie Canal have been reduced one-third on grain, and one-half on flour and salt. The tolls on grain last year were 6 cents and 2 mills per bushel. For the present year they will be 4 cents and a fraction.

—Iron has arrived at Vinton, Iowa, sufficient to lay fifteen miles of track which will complete the Burlington, Cedar Rapids & Minnesota Railroad from Vinton to Laporte, forty miles from Cedar Rapids.

—Work has been resumed on the Newport & Cincinnati railroad bridge.

Notice to Bridge Builders AND RAILROAD CONTRACTORS.

CHIEF ENGINEER AND GEN'L SUP'T'S OFFICE,
MOBILE & MONTGOMERY RAILROAD,
MONTGOMERY, Ala., April 22, 1870.

On the first day of June next, the Mobile & Montgomery Railroad Company will be prepared to let to contract all the work embraced in extension of their Road, from the East side of Mobile Bay into the city of Mobile, a distance of about twenty miles.

3,500 feet First Class Bridging on Iron Piers;
2 Large Draw Bridges;
25,000 feet Pile Trestle Work;
150,000 cubic yards Earth Work;
20 miles Clearing, Cross Ties and track laying.

After the 15th day of May, the Plans and Specifications will be ready for the inspection of parties desiring to offer proposals for this work.

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Montgomery, Ala.

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Bridges, Railroad and Highway Bridges,
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**LATHES, PLANERS,
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OLD RAILS RE-ROLLED,

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Made from the Best Charcoal Lake Superior Pig.
Also a very Superior Quality of

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Changeable Date, Secor's Patent Writing
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IXL Draw Lights, IXL Lanterns,
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This Company is by law and by the order of the
Supreme Court made a legal depository of money.
It will act as Receiver in cases of litigation, take
charge of, and guarantee the safe keeping of all
kinds of Securities, and collect coupons and
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It is authorized by law to accept and execute all
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Surrogate.

It is especially authorized to act as Register and
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issuing, registering or countersigning the certifi-
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any corporation, association, municipality, State
or public authority, and will pay coupons and divi-
dends on such terms as may be agreed upon.

In giving special prominence to this department
of its business, attention is particularly called to
the paramount advantages of employing this com-
pany in the capacity of AGENT, TRUSTEE, RECEIVER
or TREASURER, in preference to the appointment of
INDIVIDUALS. A guarantee capital of ONE MILLION
DOLLARS specially invested by requirement of its
charter, and a perpetual succession; a central and
permanent place of business, where business can
be transacted daily, without disappointment or
delay; its capital and directed and controlled by a
responsible Board of Trustees; and its entire man-
agement also under the supervision of the Supreme
Court and the Comptroller of the State.

Permanency, Constant and Responsible Super-
vision, Guaranteed Security and Business Conven-
ience and Facilities, may therefore be strongly
urged in its favor on the one hand, against the
Uncertainty of Life, the Fluctuations of Business,
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(Official Publication.) ANNUAL STATEMENT OF THE HOME INSURANCE CO. OF CHICAGO,

In the State of Illinois, on the 31st day of
Dec., 1869, made to the Auditor of
Public Accounts of the State of
Illinois, pursuant to law.

CAPITAL.
Amount of Capital Stock paid up in
full.....\$200,000 00
ASSETS OF THE COMPANY.
Value of Real Estate owned by the Com-
pany.....\$ 1,000 00
Loans on Bonds and Mortgages.....188,230 00
Loans on Collateral Security.....25,597 53
Cash on hand and in Bank.....8,071 17
Premiums in course of collection and
transmission.....7,621 48
Office Furniture, etc.....2,500 00
Interest accrued, and Stamps on hand.....3,106 91

Total Assets.....\$236,117 09
LIABILITIES OF THE COMPANY.
Claims and Losses adjusted and in pro-
cess of adjustment.....\$ 1,400 00
Amount necessary to reimburse all out-
standing risks.....15,167 10
All other debts of the Company, - Sala-
ries.....1,758 66
Total Liabilities.....\$ 18,325 76

FRED. LETZ, President.
THOMAS BUCKLEY, Secretary.
Subscribed and sworn to before me this 26th day
of January, 1870. WM. H. HOLDEN, N. P.

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IN FLEXIBLE CASES,

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ing States are now ready: Illinois, Iowa, Missouri,
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W. S. MILLS, Publisher.

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per, both useful and entertaining. Its Eastern co-
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a peer of the best religious journals in the country."

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Is now Manufactured
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DITCHING ROPES,

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Bags, Bagging, Burlaps, Canvas, Oakum,
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ANDREW KLOMAN, GEN. SUPT.

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THE UNION IRON MILLS manufacture all
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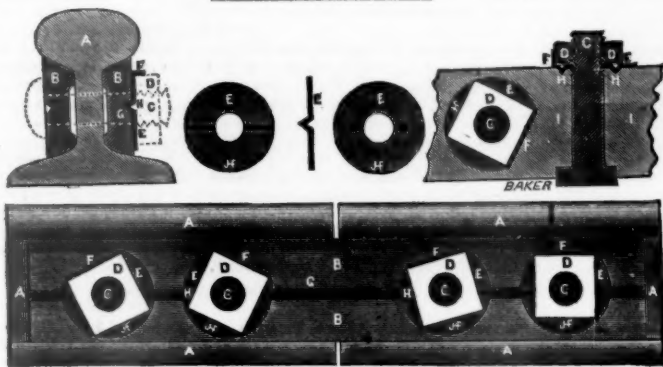
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Over 20,000 Cars covered with this Roof! We claim that these
Roofs will keep Cars dry, and will last as long as the
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IA CHEAP, SIMPLE, DURABLE AND PERFECT LOCK,
To Prevent Nuts from Jarring Loose on Fish Plates, Cars, Engines, Carriages, Trucks or Machinery of
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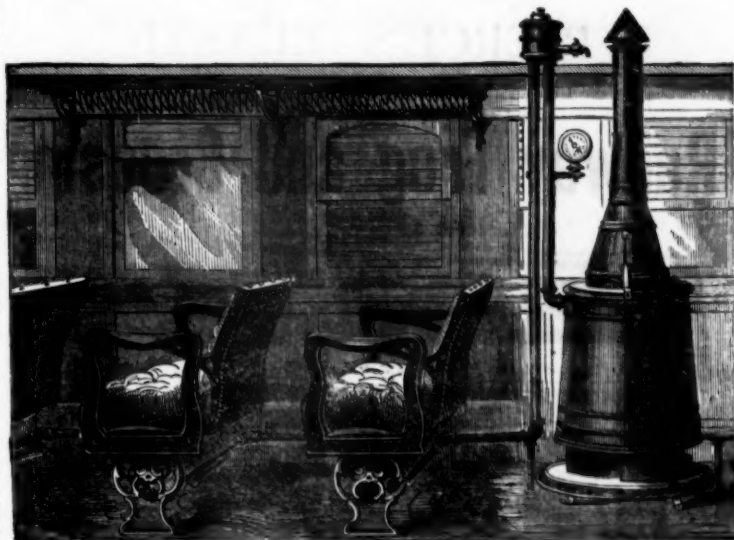
Independent Insurance Company, - of Boston,
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North American Fire Ins. Co., of New York,
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BAKER'S PATENT CAR WARMER.—One way of Applying it.

A very simple, safe and efficient plan for

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—BY—
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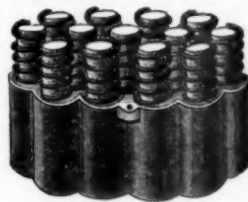
WHICH RADIATES THE HEAT DIRECTLY AT THE FEET OF EACH PASSENGER WITHOUT THE
NECESSITY OF GOING TO THE STOVE TO GET WARMED!

All the finest Drawing-Room and Sleeping Cars in the United States have it, or are adopting it.
Full descriptive pamphlets furnished on application.

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Sole Proprietors of the



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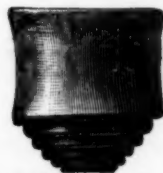
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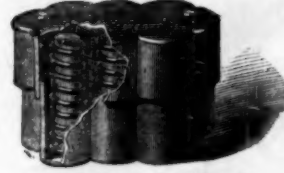
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TO RAILWAY MANAGERS!

Consult the interests of your Company, by purchasing PIERCE'S ELASTIC RENEWABLE RAIL FROG AND CROSSING. The cheapest, best and most durable yet introduced. Examine the cuts and specifications, for particulars. All Frogs and Crossings of this device warranted to give satisfaction. Orders promptly filled. Address as below. Specifications of

PIERCE'S ELASTIC RENEWABLE

Railway Frog and Crossing.

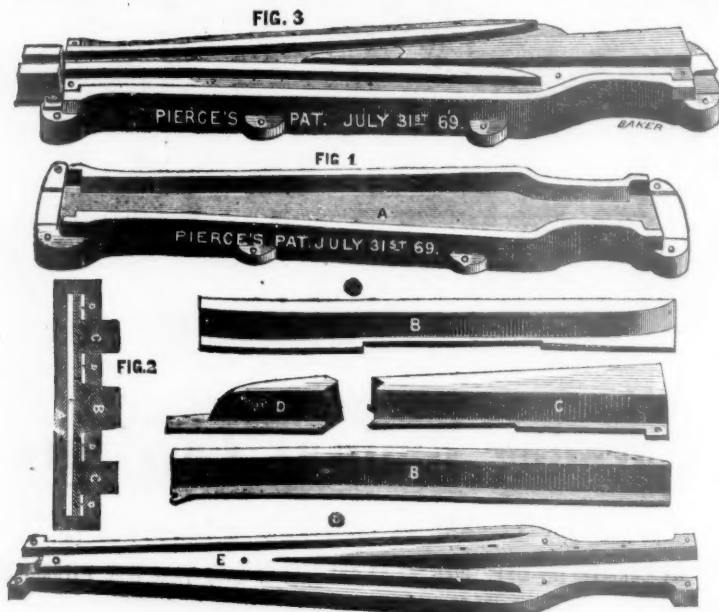


FIG. 1.—A. Permanent Bed Plate, Cast Iron.
B.B. Guard Rails, Cast Iron, wearing surface chilled, (can be made of steel if preferred.)
C. Base of point, Cast Iron, with chilled surface, or Steel.
D. Point, of Cast Steel.
E. Cap, of either Cast or Wrought Iron.
FIG. 2.—Cross Section. A. Bed Plate. B. Base. C.C. Guard Rails. D.D.D. Cap. E. Wood packing half-inch thick. F.F.F.F. Wood packing, quarter-inch thick.
FIG. 3.—Shows the Frog complete, with all its parts adjusted ready for laying down.

THE ADVANTAGES claimed for this Frog are in brief: First—The permanency of the bed plate, on which there is no wear. Second—The durability of the Guard Rails, base and point, and the ease with which they can be renewed. Also, the elasticity which is given by the packing, avoiding the rigidity of the Solid Frog. Third—The bed plate being once in position, does not require to be taken up to produce a new Frog, as the wearing surfaces (Guard-rails, base and point) are renewable at pleasure. Fourth—The Cap is adjustable and easily removed for the purpose of renewing any of the worn parts, and can be done in ten minutes time by two men. The Guard-rails, point and base, being held in position and fastened by the Cap. By this device a new Frog is produced at about one-third the original cost. Fifth—It is not necessary to take up or move the connecting rails with the Frog for the purpose of renewal. It does away with the interruption to passing trains and the labor incident to replacing the old form of Frogs. Many other points of excellence and economy might be added which it is not deemed necessary to enumerate, believing that a practical examination or test by Railroad Managers will bring out its qualities and prove its usefulness.

PRICE LIST.

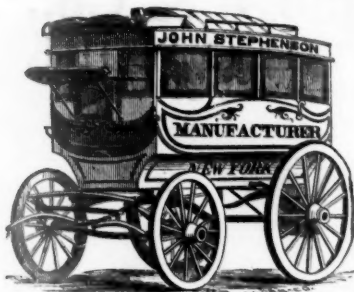
[POINT OF CAST STEEL, BASE AND GUARD RAILS OF CHILLED IRON SURFACE.]

No.	Foot Frog about 7 degrees,	\$85.00	Base, \$8 each.
2-5 1/2	" " " 8	\$85.00	Point, \$10 each.
3-5	" " " 9	\$82.00	Guard Rail, \$8 each, or Full Set, \$30.

Other sizes that may be desired, or renewable parts of Cast Steel, furnished at proportionate rates.

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CARS,

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—AND—

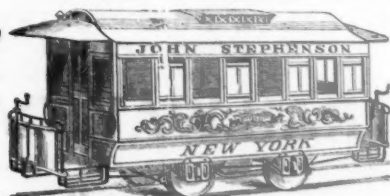
ELEGANT!

OMNIBUSES

—OF—

EVERY STYLE!

Orders Promptly Filled.



Important to Railway Companies!

The following, which we take from one of our exchanges, is but an illustration of how much money railroad companies are and have been paying for the old-style baggage-check, and how easy it is for them to be daily purchasing baggage-checks, until they amount to millions ere they are aware of the fact:

"A Rash Promise."—A paper tells the following story of a young lady who is a pupil at one of the schools in this city, and who has already, it seems, beaten her father at mathematics. She modestly proposed that if her father would give her only one cent on one day, and double the amount on each successive day for just one month, she would pledge herself never to ask of him another cent of money as long as she lived. Pater-familias, not stopping to run over the figures in his head, and not supposing it would amount to a large sum, was glad to accept the offer at once, thinking it also a favorable opportunity to include a possible marriage dowry in the future. At the twenty-fifth day, he became greatly alarmed, lest, if he complied with his own acceptance, he might be obliged to be 'declared a bankrupt on his own petition.' But at the thirtieth day, the young girl demanded only the pretty sum of \$5,368,719 1/2. The astonished merchant was only too happy to cancel the claim by advancing a handsome cash payment for his folly in allowing himself to give a bond—or his word be considered as good as a bond—without noticing the consideration therein expressed, and by promising to return to the old custom of advancing smaller sums daily until otherwise ordered."

In comparing the above with the cost of baggage-checks, it is well known by every baggage-man that to supply a road perfectly with checks, it is necessary that the baggage should have on it a check which, of itself, indicates the station for which the baggage is destined; if it has not, the baggage-check is not perfect or complete. As every intelligent person can conceive at a glance, to bring the checking of baggage to such a state of perfection with the old style of baggage-check would cost an immense amount of money, as per example: We will take the New Jersey Railroad; we will say that it has twenty stations; it will require one thousand checks from New York to Newark, one thousand from New York to Elizabeth, one thousand from New York to Rahway, one thousand from New York to New Brunswick, and so on to the whole twenty stations. Then we again commence with one thousand from Newark to all stations, one thousand from Elizabeth to all stations, and so on until all stations are supplied, then we have just commenced; as other stations are added, and other connections made, all this must be done over and over again, and there is no help for it so long as railroad companies continue to use the old-style check and system of checking baggage. The next question is, how to obviate the necessity of purchasing this immense amount of baggage-checks? Simply by adopting the Thomas Safety Baggage-Check and system of checking baggage. By its use, it matters not how many different stations are opened, or how many connections are made, the one check will go to every one of them, and, by so doing, save tens, if not hundreds of thousands of dollars to railroad companies, and, at the same time, obviate the necessity of purchasing checks by the million.

The following, from S. E. Mayo, Esq., General Ticket Agent of the Albany & Susquehanna Railway—a gentleman who has given the checking of baggage a most careful, practical consideration—is but one from nearly forty representatives of the best-managed roads in the country in reference to its incomparable value both as a local and through check:

"In reference to the Thomas Safety Railroad Baggage-Check, it has no equal; and, if I were not thoroughly convinced by personal experience, that it merits all and more than is claimed for it, I would not speak so highly in its favor. As you are aware, we have recently added a large number of new through tickets to our stock—with the Erie Railway, alone, some 88 different forms. With the old style of checking baggage, I should have been compelled to buy not less than 3,800 checks for those 88 stations, which is obviated by the Thomas system of checking baggage. Instead of covering the whole side of my baggage-room with 3,800 different forms of baggage-checks, I simply add 88 forms of station-cards to my collection, in a thirty-inch case, alongside of which are my brass checks for any station designated by card. Another great advantage possessed by this check over the old style, is, if we should discontinue our connection with any route, the Thomas Check is not lost or become useless, as is the case with the old style of checking baggage, but with the cards, they at once become available elsewhere. Experience daily convinces me that the Thomas Check is the only economical, systematic and safe check in use, and that it will not be possible much longer for its opposers to close their eyes upon its many great advantages over all other checks and systems of checking baggage, and it must ultimately commend itself to any and all who are not too prejudiced to give it a fair trial. I therefore recommend it with perfect confidence to all railroad companies as the best baggage check in use, for both local and through travel."

HENRY STEFFER, Esq., G. T. A. of the Louisville, Cincinnati & Lexington Railroad, says:

G. F. THOMAS, Esq., 90, 92 and 94 Grand Street, New York:
DEAR SIR: It is with much pleasure that I am able to inform you that our baggage-men consider the Thomas Improved Safety Baggage-Check unequalled. They inform me that it facilitates the checking of baggage wonderfully, in consequence of being able to send, with any check, a piece of baggage from any station to any station, and not being compelled to spend several minutes in looking for a particular check for a certain station; by the use of your check, they save from one-half to two-thirds of the time required to check baggage by the old style of check, and with much more certainty. To stock our road as perfectly with the old style of check as we have with yours, would require, at the least calculation, full twenty times the number of checks, which, in place of simplifying, complicates the checking of baggage; your check obviates all this complexity, and so simplifies the business that it is impossible to make a mistake, unless through gross negligence or incompetency. Previous to the introduction of the Thomas Check, in consequence of the great expense, no road would even think of bringing the checking of baggage to such a state of perfection as yours does, it requiring such large quantities of brass checks to do the business as it ought to be done, which is the reason such a great number of railroads, even to this day, adhere to the old English style of pasting and chalking baggage. I am satisfied that, if the officers of all the railroads were as well acquainted with the superiority of your check in every respect as are the officers of those roads upon which it is in use, it would be universally adopted, both as a local and through check, not only on account of its accuracy, economy and certainty, but also in consequence of its unequalled advantages in facilitating and simplifying the whole baggage business.

S. SCHROCK, Esq., Superintendent of the Morris & Essex Railroad, says:

"We have used the Thomas Safety Baggage Check on our road over two years, during which time we have never lost a piece of baggage to which it was attached, but, on the contrary, the baggage in every instance arrives at its place of destination with unerring certainty. We do, therefore, without the least hesitancy, recommend its use to any railroad company, being fully satisfied, after the most thorough trial, that, for a safe, reliable railroad baggage check, it has no equal, and, were it at this time in use upon every road in the country, the checking of baggage would not only be reduced to a perfect system, but would also be the means of saving railroad companies fully one-half of the present cost of conducting the baggage business."

JAMES M. WHITE, Esq., Train Master of the Central Railroad of Georgia, says:

"We are much pleased with the Thomas Patent Safety Baggage Check. They are just the check required by railroad companies, as they can be prepared in advance, or changed in a moment, for any station, and a very small number of brass checks does the work of many. There is not the least doubt but that it will in time take the place of all other baggage checks now in use."

A. C. DAVIS, Esq., G. T. A. of the Belvidere, Delaware & Flemington Railroad, says:

"The Thomas Safety Baggage Check works to our entire satisfaction. No failure in the transmission of baggage since we commenced its use over two years ago. The baggage masters are pleased with them, and I am well satisfied they are the best baggage check in use, and better calculated to perform the various duties of both local and through business than any or all other baggage checks I have ever seen. Every check is, and has been, kept in constant use since we first commenced using them; and, so far as certainty, simplicity and economy are concerned, they have no equal."

All necessary information in reference to the Thomas Patent Safety Railroad, Steamboat and Express Baggage Check will be given by addressing:

G. F. THOMAS, Editor Appleton's E'y Guide,

90, 92, '94 Grand St., New York.

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—RUNNING OVER THE—

Michigan Southern and Lake Shore R. R.'s,

—WAS THE—

FIRST LINE to CARRY FREIGHT BETWEEN the EAST and WEST,
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CARS RUN THROUGH TO
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IN FOUR AND FIVE DAYS!

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Great Central Route.

"BLUE LINE."

ORGANIZED JANUARY 1, 1867.



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The "BLUE LINE" is the only route that offers to shippers of freight the advantages of an unbroken gauge through from Chicago to the Seaboard, and to all Interior Points on the line of Eastern Connections beyond Suspension Bridge and Buffalo. All Through Freight is then transported between the most distant points of the roads in interest.

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are all of a solid, uniform build, thus largely lessening the chances of delay from the use of cars of a mixed construction, and the consequent difficulty of repairs, while remote from their own roads. The Blue Line is operated by the railroad companies who own it, without the intervention of intermediate parties between the Roads or Line and the public.

Trains run through with regularity **IN FOUR OR FIVE DAYS** to and from New York and Boston. Especial care given to the Safe and Quick Transport of Property Liable to Breakage or Injury, and to all **Perishable Freight**.

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WITHOUT TRANSFER!

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G. B. McCulloch, ...42 South 5th St., Philadelphia. | Wm. F. Smith, ...Erie, Penn.
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It is especially adapted to, and extensively used by leading Railroads of the country for the purpose of securing nuts on railway joints.

The accompanying cuts show the application of the Washer. For further information, apply to

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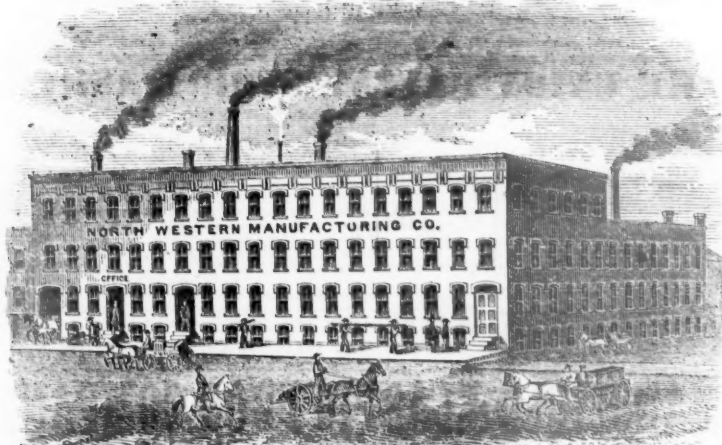
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88 MICHIGAN AVENUE, CHICAGO.

139 & 141 Federal St. Boston. | 80 Gold St., - - - New York.

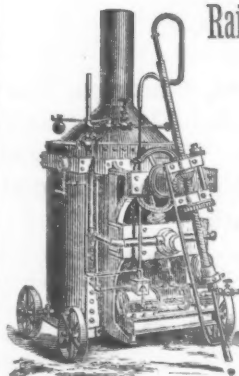
LESCHOT'S PATENT

DIAMOND POINTED

Steam Drills!

—FOR—

Railroad Grading, Well Boring, Prospecting, &c.



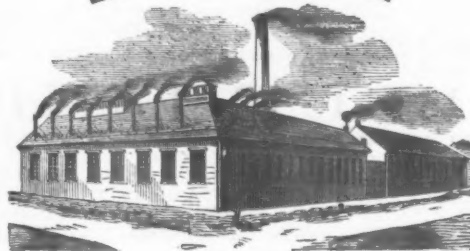
The unequalled efficiency and economy of these DRILLING MACHINES are fully established, and they are fast superseding all other inventions for ROCK DRILLING. They are constructed of various sizes and patterns to suit different classes of work, being adapted to Channelling and Gadding in quarries; to shafting, tunnelling, prospecting and all open cut work in mines; also to heavy Railroad-grading and Sub-marine Blasting. They operate noiselessly without percussion; and produce a perfectly cylindrical hole of uniform diameter. Their actual rate of boring is three to five (3 to 5) inches per minute in hard rock; eight to ten (8 to 10) inches per minute in slate and sand rock, and eighteen to twenty-two (18 to 22) inches per minute in coal TEST CORES, in the form of solid cylinders of rock or mineral may be taken out of mines from any depth—not exceeding one thousand (1,000) feet—showing the geological formation, character of mineral deposits, &c. These drills never need sharpening and no steel is consumed in boring—as the cutting point is (composed of rough, uncut diamonds,) are practically indestructible. Boilers, Engines, Steam Pumps, and all necessary tools furnished with drills. Illustrated circular sent on application.

SEVERANCE & HOLT, Man'rs,

Office, 16 Wall Street, NEW YORK.

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LANCASTER FILE CO.



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MANUFACTURERS OF

Superior Cast Steel Files.

LANCASTER, PA.

The National Iron Co.

[Successor to Wm. Hancock, Rough and Ready Iron Works,]

ESTABLISHED 1847.

DANVILLE, PENNSYLVANIA.

MANUFACTURER OF

RAILROAD IRON,

RAILROAD CHAIRS, SPLICE BARS AND BOLTS, FROGS, SWITCH RODS, STANDS AND LEVERS, HOOKHEAD AND COUNTERSUNK HEAD SPIKES, BRIDGE AND CAR BOLTS, ROLLS AND ROLLING MILL MACHINERY, BLAST FURNACE CASTINGS AND MACHINERY, STEAM ENGINES AND BOILERS, IRON AND BRASS CASTINGS, ENGINE AND MACHINE WORK, STEAM & WATER FITTINGS, &c., &c.

WM. HANCOCK, President. BENJ. J. WELCH, Sec., Treas., and P. C. BRINCK, Vice-President, 401 Gen. Manager, Danville, Pa. Walnut St., Philadelphia.

CHICAGO & NORTHWESTERN R. W.

Comprising the PRINCIPAL RAILROADS from CHICAGO Directly NORTH NORTH-WEST and WEST.

ALL RAIL TO THE PACIFIC OCEAN!

Great California Line.

TRAINS LEAVE WELLS STREET DEPOT AS FOLLOWS:

8:15 A. M. Cedar Rapids Pass 11:00 P. M. Night Mail.
10:45 A. M. Pacific Express. 11:00 P. M. R. Island Pass.
10:45 A. M. Rock Island Exp. 4:00 P. M. Dixon Passenger.

For Fulton, Clinton, Cedar Rapids, Boone, Denison, Missouri Valley Junction, Sioux City, Council Bluffs and Omaha, there connecting with the

UNION PACIFIC R. R.

For Cheyenne, Denver, Ogden, Salt Lake, the White Pine Silver Mines, Sacramento, San Francisco, and all parts of Nebraska, Colorado, New Mexico, Arizona, Wyoming, Montana, Idaho, Utah, Nevada, and the PACIFIC COAST.

FROM CHICAGO	Hours.	1st Class Fare.	FROM CHICAGO	Days.	1st Class Fare.
To OMAHA.....	23	\$20.00	To SACRAMENTO..	4½	\$118.00
" DENVER.....	52	70.75	" SAN FRANCISCO, 5		118.00

TRAINS ARRIVE:—Night Mail, 7:00 a. m.; Dixon Passenger, 11:10 a. m.; Pacific Express, 3:25 p. m.; Rock Island Express, 3:25 p. m.; Cedar Rapids Passenger, 6:50 p. m.

FREEPORT LINE.

9.00 A. M. & 9.45 P. M. For Belvidere, Rockford, Freeport, Galena, Dunleith, and St. Paul.

4.00 P. M., Rockford Accommodation.

5.30 P. M., Geneva and Elgin Accommodation.

6.10 P. M., Lombard Accommodation.

TRAINS ARRIVE:—Freeport Passenger, 2:30 a. m.; 3:00 p. m.; Rockford Accommodation, 11:05 a. m.; Geneva and Elgin Accommodation, 8:45 a. m.; Lombard Accommodation, 6:50 a. m.

WISCONSIN DIVISION.

Trains leave Depot, cor. West Water and Kinzie Sts., daily, Sundays excepted, as follows:
10.00 A. M. DAY EXPRESS, for Janesville, Monroe, Whitewater, Madison, Prairie du Chien, Watertown, Minnesota Junction, Portage City, Sparta, La Crosse, St. Paul, and ALL POINTS ON THE UPPER MISSISSIPPI RIVER; Ripon, Berlin, Fond du Lac, Oshkosh, Neenah, Appleton, and Green Bay.

3.00 P. M., Janesville Accommodation.

5.00 P. M. NIGHT EXPRESS, for Madison, Prairie du Chien, Watertown, Minnesota Junction, Portage City, Sparta, La Crosse, St. Paul, and ALL POINTS ON THE UPPER MISSISSIPPI RIVER; Ripon, Berlin, Fond du Lac, Oshkosh, Menasha, Appleton, Green Bay, and THE LAKE SUPERIOR COUNTRY.

5.30 P. M., Woodstock Accommodation.

TRAINS ARRIVE:—5:30 a. m., 9:00 a. m., 2:00 p. m. and 7:15 p. m.

MILWAUKEE DIVISION.

9.45 A. M. & 5.00 P. M. EXPRESS, (except Sunday,) for Waukegan, Kenosha, Racine and Milwaukee.

MILWAUKEE ACCOMMODATION, with Sleeping Car attached.....11:00 P. M.

EVANSTON ACCOMMODATION, (Daily,) from Wisconsin Div. Depot.....1:30 P. M.

KENOSHA ACCOMMODATION, (Sundays excepted) from Wells St. Depot.....4:15 P. M.

AFTERNOON PASSENGER, from Milwaukee Div. Depot.....5:00 P. M.

WAUKEGAN ACCOMMODATION, (except Sundays) from Wells St. Depot.....5:25 P. M.

WAUKEGAN PASSENGER, (Sundays excepted) from Wells St. Depot.....6:10 P. M.

TRAINS ARRIVE:—Night Accommodation, with Sleeping Car, 5:45 a. m.; Day Express, 10:45 a. m. and 7:30 p. m.; Waukegan Accommodation, 8:40 a. m.; Kenosha Accommodation, 9:10 a. m.; Evanston Accommodation, 4:00 p. m.; Waukegan Passenger, 8:10 a. m.

PULLMAN PALACE CARS ON ALL NIGHT TRAINS.

THROUGH TICKETS Can be purchased at all principal Railroad Offices East and South, and in Chicago at the Southeast corner of Lake and Clark Streets, and at the Passenger Stations as above.

H. P. STANWOOD, JNO. P. HORTON, GEO. L. DUNLAP,
Gen. Ticket Agt. N. W. Pass. Agt. Gen'l Supt.

Western Union Railroad.

CHICAGO & NORTHWESTERN DEPOT, CHICAGO. MILWAUKEE & CHICAGO DEPOT, MILWAUKEE.

THE DIRECT ROUTE!

CHICAGO, RACINE & MILWAUKEE,

—TO—

Beloit, Savanna, Clinton, Pt. Byron, Davenport, Mineral Point,

Madison, Freeport, Fulton, Lyons, Rock Island, Sabula,

Galena, Dubuque, Des Moines, Council Bluffs,

OMAHA, SAN FRANCISCO

AND ALL PRINCIPAL POINTS IN

Southern and Central Wisconsin, Northern Illinois, and Central and Northern Iowa.

FRED. WILD, D. A. OLIN,
Gen. Ticket Agent. Gen. Superintendent.



CRERAR, ADAMS & CO.,

MANUFACTURERS AND DEALERS IN

Railroad Supplies!

—AND—

CONTRACTORS' MATERIAL.

11 and 13 Wells Street,

CHICAGO, ILL.

Manufacturers of IMPROVED HEAD-LIGHTS for Locomotives, and Signal Lamps, Car and Station Lamps, Brass Dome Casings, Dome Mouldings, Cylinder Heads, and Car Trimmings, of Every Description

Pan-Handle

—AND—

Penn'a Central Route East!

THE SHORTEST AND QUICKEST ROUTE, VIA COLUMBUS, TO

PITTSBURGH, BALTIMORE, PHILADELPHIA & NEW YORK

On and after Saturday, JANUARY 1st, 1870, Trains for the East will run as follows:

[DEPOT CORNER CANAL AND KINZIE STS., WEST SIDE.]

6:45 A. M. NEW YORK EXPRESS.

[SUNDAYS EXCEPTED.] Arriving at

COLUMBUS... 8:55 P. M. HARRISBURG... 2:30 P. M. NEW YORK... 10:35 P. M. WASHINGTON... 1:00 P. M. PITTSBURGH... 4:47 A. M. PHILADELPHIA... 7:00 P. M. BALTIMORE... 7:00 P. M. CITY... 10:00 P. M.

7:45 P. M. NIGHT EXPRESS.

[SATURDAYS EXCEPTED.] Arriving at:

COLUMBUS... 11:10 A. M. HARRISBURG... 5:30 A. M. NEW YORK... 12:35 P. M. WASHINGTON... 1:00 P. M. PITTSBURGH... 7:05 P. M. PHILADELPHIA... 9:40 A. M. BALTIMORE... 9:00 A. M. BOSTON... 11:50 P. M.

Woodruff's Palace Day and Sleeping Cars

Run Through to COLUMBUS, and from Columbus to NEW YORK, WITHOUT CHANGE!

ONLY ONE CHANGE TO NEW YORK, PHILADELPHIA, OR BALTIMORE!

TRY THE NEW ROUTE. FARE AS LOW AS BY OTHER LINES.

CINCINNATI & LOUISVILLE AIR LINE SOUTH.

42 Miles the Shortest Route to Cincinnati.

18 Miles the Shortest Route to Indianapolis and Louisville.

—FROM ONE TO—

2 Hours the Quickest Route to Cincinnati!

THE SHORTEST AND BEST ROUTE TO

Columbus, Chillicothe, Hamilton, Wheeling, Parkersburg, Evansville, Dayton, Zanesville, Marietta, Lexington, Terre Haute, Nashville,

ALL POINTS IN CENTRAL & SOUTHERN OHIO, & INDIANA, KENTUCKY & VIRGINIA.

—QUICK, DIRECT AND ONLY ALL RAIL ROUTE TO—

New Orleans, Memphis, Mobile, Vicksburg, Charleston, Savannah,

AND ALL POINTS SOUTH.

Cincinnati, Indianapolis and Louisville Trains run as follows:

THROUGH WITHOUT CHANGE OF CARS!

6:45 A. M. 7:45 P. M.

(Sundays excepted) Arriving at

LOGANSPORT.....	12:10 P. M.	LOGANSPORT.....	1:30 A. M.
KOKOMO..... <th>1:40 P. M.</th> <td>KOKOMO..... <th>2:49 A. M.</th> </td>	1:40 P. M.	KOKOMO..... <th>2:49 A. M.</th>	2:49 A. M.
CINCINNATI..... <th>9:40 P. M.</th> <td>CINCINNATI..... <th>10:00 A. M.</th> </td>	9:40 P. M.	CINCINNATI..... <th>10:00 A. M.</th>	10:00 A. M.
INDIANAPOLIS..... <th>4:30 P. M.</th> <td>INDIANAPOLIS..... <th>6:50 A. M.</th> </td>	4:30 P. M.	INDIANAPOLIS..... <th>6:50 A. M.</th>	6:50 A. M.
LOUISVILLE..... <th>11:30 A. M.</th> <td>LOUISVILLE..... <th>3:30 P. M.</th> </td>	11:30 A. M.	LOUISVILLE..... <th>3:30 P. M.</th>	3:30 P. M.

Lausang Accommodation: Leaves 3:45 P. M. Arrives 9:15 A. M.

PULLMAN'S PALACE SLEEPING CARS!

Accompany all Night Trains between Chicago and Cincinnati or Indianapolis.

Ask for Tickets via COLUMBUS for the East, via HAGERSTOWN for Cincinnati, and via KOKOMO for Indianapolis, Louisville and points South. Tickets for sale and Sleeping Car Berths secured at 95 RANDOLPH STREET, CHICAGO, and at Principal Ticket Offices in the West and Northwest.

WM. L. O'BRIEN,
Gen. Pass. and Ticket Agent, Columbus.

I. S. HODSDON,
Northwestern Pass. Agt., Chicago.

KANSAS PACIFIC RAILWAY.

Great Smoky Hill Route!

—TO—

COLORADO, NEW MEXICO, ARIZONA, UTAH,

Montana, Nevada, California and Northern States of Old Mexico.

COMPLETED THROUGH KANSAS, TO

Carson, Colorado, 487 Miles West of Kansas City and Leavenworth.

Close Connections are made with Express Trains of the HANNUAL & ST. JOSEPH and NORTH MISSOURI RAILROADS, at KANSAS CITY, and with Missouri Pacific Railroad at STATE LINE.

DAILY EXPRESS TRAINS are run between

KANSAS CITY, LEAVENWORTH, LAWRENCE,

Topeka, Wamego, Manhattan, Junction City, Salina, Brookville, HARKER, HAYS and CARSON.

Pullman's Sleeping Cars Attached to Night Express Trains!

Passenger Time from Kansas City to Denver, Less than 50 Hours.

Hughes & Co.'s Four-Horse Concord Coaches leave Carson daily for Denver, Central City, Georgetown, &c.

Southern Overland Passenger Express and Mail Coaches leave Carson daily for Fort Lyon, Pueblo, Trinidad, Fort Union, Las Vegas, Santa Fe, &c.

Ask for Through Tickets via Kansas Pacific Railway, "Smoky Hill Route." Freight and Passage Rates as Low and Time as Quick as by any other Route.

R. B. GEMMELL, Gen. Ticket Agent.

A. ANDERSON, Gen. Supt.

THE FAVORITE THROUGH PASSENGER ROUTE!

Chicago, Burlington & Quincy

RAILROAD. AND CONNECTIONS.

3 THROUGH EXPRESS TRAINS DAILY.

FROM CHICAGO	Hours.	1st Class Fare.	FROM CHICAGO	Days.	1st Class Fare.
To OMAHA, -	- 23	\$20.00	To DENVER, -	- 2½	\$70.75
" ST. JOSEPH, -	21	19.50	" SACRAMENTO, -	4½	118.00
" KANSAS CITY, -	22	20.00	" SAN FRANCISCO, -	5	118.00

TRAINS LEAVE CHICAGO from the Great Central Depot, foot of Lake Street, as follows:

BURLINGTON, KEOKUK, COUNCIL BLUFFS AND OMAHA.**7:40 A. M. MAIL AND EXPRESS.** (Daily except Sunday,) stopping at all principal stations between Chicago and Burlington; making close connections at Mendota with Illinois Central for Amboy, Dixon, Freeport, Galena, Dunleith, Dubuque, LaSalle, El Paso, Bloomington, &c., &c.**10:45 A. M. PACIFIC EXPRESS.** (Daily except Sunday,) stopping only at Riverside, Hinsdale, Aurora, Leland, Mendota, Princeton, Rock Island Crossing, Buda, Kewanee, Galva, Galesburg, and Monmouth, between Chicago and Burlington. **PULLMAN PALACE DRAWING ROOM CAR** attached to this train daily from Chicago.

TO COUNCIL BLUFFS AND OMAHA, WITHOUT CHANGE!

11:30 P. M. NIGHT EXPRESS. (Daily, except Saturday,) stopping at all principal stations between Chicago and Burlington. **ELEGANT DAY COACHES**, and a **PULLMAN PALACE SLEEPING CAR** are attached to this train from Chicago to Burlington, without change! This is the only Route between**CHICAGO, COUNCIL BLUFFS & OMAHA,**

— RUNNING THE CELEBRATED —

Pullman Palace Dining Cars!

The Shortest, Best, Quickest and only Route between

CHICAGO & KEOKUK,

Without Ferrying the Mississippi River!

QUINCY, ST. JOSEPH, LEAVENWORTH AND KANSAS CITY.**10:45 A. M. PACIFIC EXPRESS.** (Daily, except Sunday,) with Pullman Palace Coach attached, running through from Chicago to KANSAS CITY, Without Change!**5:00 P. M. EVENING EXPRESS.** (Daily, except Sunday,) with Pullman Palace Drawing Room Sleeping Car attached, running through from Chicago to QUINCY, Without Change!**11:30 P. M. NIGHT EXPRESS.** (Daily, except Saturday,) with Pullman Palace Drawing Room Sleeping Car attached from Chicago to GALESBURG; Palace Day Coaches from Chicago to QUINCY, Without Change!

This is the Shortest, Quickest and only Route between

CHICAGO AND KANSAS CITY,

WITHOUT CHANGE OF CARS OR FERRY.

THE SHORTEST, BEST AND QUICKEST ROUTE BETWEEN CHICAGO AND

St. Joseph, Atchison, Weston, Leavenworth,

AND ALL POINTS ON THE KANSAS PACIFIC R.R.

Local Trains Leave: RIVERSIDE & HINSDALE ACCOMMODATION, 7:00 A. M. 1:30 & 6:15 P. M. MENOTA PASSENGER, 4:15 P. M. AURORA PASSENGER, 5:30 P. M.**Trains Arrive:** Mail and Express, 3:45 p. m.; Atlantic Exp., 4:15 p. m., except Sunday; Night Exp., 9:40 a. m., except Monday; Mendota Passenger, 10:10 a. m.; Aurora Passenger, 8:15 a. m.; Quincy Passenger, 7:30 P. M.; Riverside and Hinsdale Accommodation, 6:50 and 9 a. m. and 5:30 p. m., except Sunday.

Ask for Tickets via Chicago, Burlington & Quincy Railroad, which can be obtained at all principal offices of connecting roads, and at Company's office in Great Central Depot, Chicago, at as low rates as by any other route.

ROBT HARRIS, Gen'l Superintendent, CHICAGO. **SAM'L POWELL,** Gen'l Ticket Agent, CHICAGO. **E. A. PARKER,** Gen. West. Pass. Agt., CHICAGO.**PASSENGERS GOING WEST!**

To Missouri, Kansas, Nebraska, Colorado or New Mexico, Should Buy Tickets via the Short Route

HANNIBAL & ST. JOSEPH R. R. LINE.

Three Express Trains from Quincy or Macon to St. Joseph.

— ALSO DIRECT —

To Kansas City

WITHOUT CHANGE OF CARS!

CONNECTIONS ARE CLOSE AND DIRECT FOR

ATCHISON, WESTON & LEAVENWORTH.

CONNECTIONS:

AT KANSAS CITY, with Kansas Pacific Railway, for Lawrence, Ottawa, Topeka, Fort Riley Junction City, Fort Hays, Sheridan, &c.**AT KANSAS CITY,** with Kansas City, Fort Scott, and Galveston Railroad, for Fort Scott, Fort Gibson, Galveston, &c.**AT ST. JOSEPH,** with St. Joseph & Council Bluffs Railroad, ALL RAIL from St. Joseph to**Nebraska City, Council Bluffs & Omaha.****AT OMAHA,** with Nebraska Union Pacific Railroad, for Fort Kearney, Julesburg, Cheyenne, Laramie, Benton, &c.**AT COUNCIL BLUFFS,** for Sioux City, all Rail.

By this Line, passengers have choice of Overland Routes, either via Smoky Hill or Platte Route to Denver, Central City, Salt Lake, Sacramento, California and all points in the Mining Regions. Daily Overland Coaches via Smoky Hill Route leave Sheridan, end of U. P. R. R., for Santa Fe and New Mexico.

Through Tickets for Sale at all Ticket Offices.

P. B. GROAT, Gen. Ticket Agent.

GEO. H. NETTLETON, Gen. Supt.

HENRY STARRING, Gen. Agent, Chicago.

Old, Reliable, Air-Line Route!

CHICAGO, ALTON & ST. LOUIS R. R.

SHORTEST, QUICKEST AND ONLY DIRECT ROAD TO

Bloomington, Springfield, Jacksonville, Alton,

— AND —

ST. LOUIS!

WITHOUT CHANGE OF CARS.

THE ONLY ROAD MAKING IMMEDIATE CONNECTIONS AT ST. LOUIS, WITH MORNING AND EVENING TRAINS

— FOR —

ATCHISON, LEAVENWORTH, KANSAS CITY,

Lawrence, Topeka, Memphis, New Orleans,

And All Points South and Southwest.

TRAINS leave CHICAGO from the West-side Union Depot, near Madison Street Bridge.

EXPRESS MAIL, [Except Sundays].....10:00 A. M.
LIGHTNING EXPRESS, [Except Saturdays and Sundays].....11:00 P. M.
NIGHT EXPRESS, [Except Saturdays].....7:05 P. M.
JOLIET ACCOMMODATION, [Except Sundays].....4:00 P. M.
JACKSONVILLE EXPRESS, [Daily].....7:10 P. M.

Trains arrive at Chicago at 8:10 P. M., 7:10 A. M. and 12:45 P. M. Joliet Accom., 9:45 A. M.

This is the ONLY LINE Between CHICAGO & ST. LOUIS RUNNING

Pullman's Palace Sleeping and Celebrated Dining Cars!

BAGGAGE CHECKED THROUGH.

Through Tickets can be had at the Company's office, No. 55 Dearborn street, Chicago, or at the Depot, corner of West Madison and Canal streets, and at all principal Ticket Offices in the United States and Canada. Rates of Fare and Freight as low as by any other Route.

A. NEWMAN, Gen. Pass. Agent.

J. C. McMULLIN, Gen. Supt.

North Missouri R. R.

PASSENGERS FOR

KANSAS AND THE WEST,

ARE REMINDED THAT

THE NORTH MISSOURI R. R.

— IS —

11 MILES SHORTER than any other Route!

BETWEEN

St. Louis and Kansas City.

15 Miles Shorter between ST. LOUIS and LEAVENWORTH

— AND —

49 MILES SHORTER TO ST. JOSEPH!

THAN ANY OTHER LINE OUT OF ST. LOUIS.

Three Through Express Trains Daily!

Pullman's Celebrated Palace Sleeping Cars on all Night Trains!

FOR TICKETS, apply at all Railroad Ticket Offices, and see that you get your Tickets via St. Louis and North Missouri Railroad.

C. N. PRATT,
Gen. East'n Agt., 111 Dearborn st.
CHICAGO.J. M. DAVIES,
General Passenger Agent,
ST. LOUIS.S. H. KNIGHT,
General Superintendent,
ST. LOUIS.**Pacific Railroad of Missouri.**

THE MOST DIRECT AND RELIABLE ROUTE FROM ST. LOUIS THROUGH TO

KANSAS CITY, LEAVENWORTH & ATCHISON,

WITHOUT CHANGE OF CARS!

Close Connections at KANSAS CITY with Missouri Valley, Missouri River, Ft. Scott & Gulf, and Kansas Pacific R's, for Weston, St. Joseph, Junction City, Fort Scott, Lawrence, Topeka, Sheridan, Denver, Fort Union, Santa Fe, and

ALL POINTS WEST!

At SEDALIA, WARRENSBURG and PLEASANT HILL, with Stage Lines for Warsaw, Quincy, Bolivar, Springfield, Clinton, Osceola, Lamar, Carthage, Granby, Neosho, Baxter Springs, Fort Gibson, Fort Smith, Van Buren, Fayetteville, Bentonville.

PALACE SLEEPING CARS on all NIGHT TRAINS.

Baggage Checked Through Free!

THROUGH TICKETS for sale at all the Principal Railroad Offices in the United States and Canada. Be Sure and Get your Tickets over the PACIFIC R. R. OF MISSOURI.

W. B. HALE,
Gen. Pass. and Ticket Agt.THOS. McKISSOCK,
General Superintende

Hours the Quickest, and Sixty-One Miles the Shortest Line!

— FROM —

CHICAGO TO NEW YORK.

Pittsburgh, Ft. Wayne & Chicago and Pennsylvania Central

IS THE ONLY ROUTE RUNNING ITS ENTIRE TRAIN THROUGH TO PHILADELPHIA AND NEW YORK, AND THE ONLY ROUTE RUNNING

THREE DAILY LINES OF PULLMAN'S DAY AND SLEEPING PALACES,

— FROM CHICAGO TO —

Harrisburg, Philadelphia and New York,

WITHOUT CHANGE!

WITH BUT ONE CHANGE TO

BALTIMORE, PROVIDENCE, NEW HAVEN, HARTFORD, SPRINGFIELD, WORCESTER AND BOSTON!

Trains Leave WEST SIDE UNION DEPOT, corner West Madison and Canal Streets, as follows:

LEAVE:	Mail	Day Express	Pacific Exp.	Night Exp.	VALENTINE
CHICAGO	6.40 A. M.	11.00 A. M.	5.15 P. M.	9.00 P. M.	LEAVE CHICAGO
PLYMOUTH	10.46 "	2.00 P. M.	9.10 "	2.15 A. M.	LEAVE CHICAGO
FORT WAYNE	2.00 P. M.	3.55 "	11.30 "	5.30 "	LEAVE CHICAGO
LIMA	4.34 "	5.30 "	1.35 A. M.	8.10 "	LEAVE CHICAGO
FOREST	5.40 "	6.25 "	2.45 "	9.40 "	LEAVE CHICAGO
CRESTLINE	6.00 A. M.	8.00 "	4.30 "	12.05 P. M.	LEAVE CHICAGO
MAN'SFIELD	6.42 "	8.25 "	5.07 "	12.34 "	LEAVE CHICAGO
ORRVILLE	9.05 "	10.00 "	6.45 "	2.27 "	LEAVE CHICAGO
ALLIANCE	11.15 "	11.30 "	8.40 "	3.55 "	LEAVE CHICAGO
ROCHESTER	1.05 P. M.	1.15 A. M.	10.52 "	6.02 "	LEAVE CHICAGO
PITTSBURGH	4.00 "	2.50 "	12.45 P. M.	7.50 "	LEAVE CHICAGO
BLAIRSVILLE BRANCH	6.05 "	4.34 "	2.49 "	9.54 "	LEAVE CHICAGO
JOHNSTOWN	6.56 "	5.18 "	3.37 "	10.42 "	LEAVE CHICAGO
CRESSON	7.58 "	6.04 "	4.38 "	11.43 "	LEAVE CHICAGO
ALTOONA	9.05 "	7.00 "	5.45 "	12.35 A. M.	LEAVE CHICAGO
HUNTINGDON	10.21 "	8.06 "	7.04 "	1.45 "	LEAVE CHICAGO
LEWISTOWN	11.44 "	9.10 "	8.23 "	2.59 "	LEAVE CHICAGO
HARRISBURG	2.10 A. M.	11.12 "	10.45 "	5.30 "	LEAVE CHICAGO
LANCASTER	3.40 "	12.37 P. M.	12.15 A. M.	7.00 "	LEAVE CHICAGO
DOWNTOWN	5.00 "	1.37 "	1.40 "	8.16 "	LEAVE CHICAGO
ARRIVE:					
PHILADELPHIA	6.30 "	2.45 "	3.10 "	9.40 "	7.00 "
NEW YORK, VIA PHILADELPHIA	10.41 "	6.00 "	6.48 "	1.00 P. M.	10.36 "
NEW YORK, VIA ALLENTOWN		6.00 "		12.05 P. M.	
BALTIMORE		2.45 "	4.30 "	9.00 A. M.	7.00 "
WASHINGTON		6.30 "	5.50 "	1.00 P. M.	10.00 "
BOSTON		9.00 P. M.	5.50 A. M.	5.05 P. M.	11.50 "

THE DAY EXPRESS Leaves Chicago daily, except Sunday; the entire Train, Baggage, Day and Palace Cars—RUNNING THROUGH from Chicago to New York, except Saturday; leaves Pittsburgh daily, except Sunday; has SLEEPING CAR from Crestline to Altoona, except Saturday. This train reaches NEW YORK one and a half hours in advance of all other lines, and in time to make close connection for BOSTON! No other Route through New York makes it! Arrives in BALTIMORE Five Hours, and WASHINGTON Four Hours in Advance of Rival Routes!

THE PACIFIC EXPRESS Leaves Chicago and Pittsburgh daily, for Philadelphia and New York, with THROUGH SILVER PALACE CARS from Chicago; leaves Harrisburg for Baltimore daily, except Sunday; has SLEEPING CARS from Chicago to Pittsburgh, and from Altoona to Philadelphia. This train arrives in NEW YORK One Hour, BALTIMORE Nine Hours, and WASHINGTON Seven Hours, in Advance of all other Lines!

THE NIGHT EXPRESS Leaves Chicago daily, except Saturday and Sunday; leaves Pittsburgh daily, except Sunday; leaves Harrisburg for Baltimore daily; has SILVER PALACE CARS on Tuesday, Wednesday and Friday; COMPARTMENT CAR on Monday and Thursday from Chicago to Philadelphia and New York; has SLEEPING CARS from Chicago to Crestline, and from Pittsburgh to New York, Philadelphia and Baltimore. This train reaches NEW YORK One Hour, and BALTIMORE Three Hours in Advance of competing Routes!

THE MAIL Leaves Chicago daily, except Sunday, stopping at all Stations, and reaching Crestline the same evening (where passengers can transfer to Day Express); leaves Crestline (Express) the next morning, and leaves Pittsburgh daily, except Sunday. SLEEPING CARS from Pittsburgh to Philadelphia.

THE SOUTHERN EXPRESS Leaves PITTSBURGH daily, except Monday, with SILVER PALACE CARS to Philadelphia and New York; leaves Harrisburg for Baltimore daily, except Sunday.

BOSTON AND NEW ENGLAND PASSENGERS will find this Route especially Desirable, as it Gives them an opportunity of Seeing the **FINEST VIEWS AMONG THE ALLEGHANY MOUNTAINS**,

Besides Visiting PITTSBURGH, PHILADELPHIA AND NEW YORK, without extra cost!

All New England Passengers holding Through Tickets, will be Transferred, with their Baggage, to Rail and Boat Connections in NEW YORK, WITHOUT CHARGE.

Close Connections Made at Lima for all Points on the Dayton & Mich. and Cin., Hamilton & Dayton R'ys,

And at CRESTLINE, for CLEVELAND, ERIE, DUNKIRK, BUFFALO, NIAGARA FALLS, and all Points reached via Lake Shore R. R.

THROUGH TICKETS FOR SALE AT THE COMPANY'S OFFICES, N.W. COR. RANDOLPH & LA SALLE ST.,

65 and 52 Clark St., Cor. Randolph and Wells St., (under the Briggs House,) and at Depot, Chicago; also at Principal Ticket Offices in the West.

F. R. MYERS, Gen. Pass. and Ticket Agt, P. & F. W. R'y, Chicago.

W. C. CLELAND, Gen. Western Pass. Agt, P. Ft. W. & C. R'y, Chicago.

T. L. KIMBALL, Gen. Western Pass. Agent, Penn. Central R. R., Chicago.

WHAT IS SAID OF THE RAILROAD GAZETTE.

"A very neat publication in point of appearance, and, as it always has been, is now a reliable, interesting and accurate journal, ably edited in its various departments."—*Our scissors have wandered over its columns "many a time and oft," and always with gratifying results.*—*Buffalo Commercial Advertiser.*

"The news is very full, the discussions are conducted in good temper and with excellent information. To judge from this first number, the conductors of the Gazette know what "railroading" is, and what a proper weekly journal should be."—*New York World.*

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"In every respect a worthy representative of the energetic and go-ahead city where it is published."—*Cincinnati Railroad Record.*

"Of great interest to railroad men, and almost equally so to those who use railroads."—*Marshall (Mich.) Statesman.*

"Makes a very handsome appearance and is full of valuable matter."—*Chicago Evening Post.*

"Every man who is at all interested in railroads would do well to take the GAZETTE."—*Jacksonville (Ill.) Independent.*

"It appears to be in many features the best journal of its class now extant."—*New York Official Railway News.*

"An impartial and independent journal, valuable to every railroad man."—*Parkersburg (W. Va.) Times.*

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"Unquestionably the best railroad journal in the United States."—*Waukegan (Ill.) Patriot.*

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Broad Gauge! Double Track!

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4 EXPRESS TRAINS DAILY!

From Cleveland, Dunkirk and Buffalo, 625 Miles, to New York, WITHOUT CHANGE of Coaches!

The Trains of this Railway are run in DIRECT CONNECTION WITH ALL WESTERN AND SOUTHERN LINES, for

Elmira, Williamsport, Oswego, Great Bend, Scranton, Newburgh, &c.

NEW YORK, ALBANY, BOSTON, PROVIDENCE, AND PRINCIPAL NEW ENGLAND CITIES.

New and Improved DRAWING ROOM COACHES are attached to the DAY EXPRESS Running THROUGH TO NEW YORK.

SLEEPING COACHES, Combining all Modern Improvements, with perfect Ventilation and the peculiar arrangements for the comfort of Passengers incident to the BROAD GAUGE, accompany all night trains to New York.

CONNECTIONS CERTAIN! as Trains on this Railway will, when necessary, wait from one to two hours for Western trains.

All Trains of Saturday run directly Through to New York.

Ask for Tickets via Erie Railway, which can be procured at 66 Clark Street, Chicago, and at all Principal Ticket offices in the West and Southwest.

L. D. RUCKER, A. J. DAY, WM. R. BARR,
Gen'l Superintendent, New York. Western Passenger Agent, Chicago. Gen'l Passenger Agent, New York.

LAKE SHORE — AND — MICHIGAN SOUTHERN R.W.

THE GREAT THROUGH LINE BETWEEN
CHICAGO, BUFFALO & NEW YORK,
WITHOUT CHANGE!

AND THE ONLY RAILWAY

RUNNING PALACE COACHES THROUGH!

— BETWEEN —

CHICAGO & NEW YORK, via BUFFALO
WITHOUT TRANSFER OF PASSENGERS!

All Trains Stop at Twenty-Second Street to Take and Leave Passengers.
Baggage Checked at that Station for all Points East.

4 EXPRESS TRAINS DAILY, [Sundays Excepted,] Leave
Chicago from the New Depot, on Van Buren St., at the head of La Salle Street, as follows:

7:30 A. M. MAIL TRAIN.
VIA OLD ROAD. SUNDAYS EXCEPTED.

Leaves 22d Street 7:45 A. M. Stops at all Stations. Arrives—Toledo, 6:30 P. M.

11:00 A. M. SPECIAL NEW YORK EXPRESS,
VIA AIR LINE. SUNDAYS EXCEPTED.

Leaves—Twenty-Second Street, 11:15 A. M. Arrives—Elkhart, 2:55 P. M.; Cleveland 10:30 P. M.; Buffalo, 4:10 A. M.; New York, 6:55 P. M.; Boston, 11:45 P. M.

This Train has **PALACE SLEEPING COACH** Attached, Running
THROUGH TO ROCHESTER, WITHOUT CHANGE!

IN DIRECT CONNECTION WITH

Wagner's Celebrated Drawing-Room Coaches on N. Y. Central R. R.

5:15 P. M. ATLANTIC EXPRESS (Daily),
VIA AIR LINE.

Leave—Twenty-Second Street 5:30 P. M. Arrives—Laporte, 8:10 P. M. (Stops 20 minutes for Supper); arrives at Toledo, 2:50 A. M.; Cleveland, 7:35 A. M. (30 minutes for Breakfast); arrives at Buffalo, 1:35 P. M.; Rochester, 5:10 P. M. (30 minutes for Supper); connects with **Sleeping Coach** running through from Rochester to Boston without change, making but one change between Chicago and Boston.

NEW AND ELEGANT SLEEPING COACH Attached to this Train, Running
THROUGH from CHICAGO TO NEW YORK WITHOUT CHANGE! Arrives
at NEW YORK, 7:00 A. M.

9:00 P. M. NIGHT EXPRESS
VIA AIR LINE. (DAILY EXCEPT SAT. & SUN.)

Leaves—Twenty-Second Street, 9:15 P. M. Arrives—Toledo, 6:35 A. M. (30 minutes for Breakfast); arrives at Cleveland, 10:35 A. M.; Buffalo, 5:30 P. M.; New York, 11:00 A. M.; Boston, 3:50 P. M.

KALAMAZOO DIVISION.

Leave Chicago 7:30 A. M. Arrive at Kalamazoo 3:15 P. M.;
Grand Rapids, 8:15 P. M.

Leave Chicago 9:00 P. M. Arrive at Kalamazoo 4:40 A. M.;
Grand Rapids, 10:00 A. M.

There being no heavy grades to overcome, or mountains to cross, the road bed and track being the smoothest and most perfect of any railway in the United States, this Company run their trains at a high rate of speed with perfect safety.

Travelers who wish to SAVE TIME and make SURE CONNECTIONS, purchase Tickets via

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BUFFALO, WITHOUT TRANSFER, and in Direct Connection with NEW YORK
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CHAS. F. HATCH,
General Superintendent, CLEVELAND, OHIO.

F. E. MORSE,
General Western Passenger Agent, CHICAGO.

ILLINOIS CENTRAL RAILROAD.

PASSENGER TRAINS LEAVE CHICAGO FROM THE GREAT CENTRAL DEPOT, FOOT OF LAKE ST

ST. LOUIS AND CHICAGO THROUGH LINE.

8:30 A. M. DAY EXPRESS, Sundays Excepted.
Arriving in ST. LOUIS at 9:30 P. M.

This Train Reaches St. Louis ONE HOUR & FIFTEEN MINUTES in Advance of any other Route!

9:30 P. M. FAST LINE, Saturdays Excepted.
Arriving at ST. LOUIS at 10:30 A. M.

AT ST. LOUIS, Direct Connections are Made FOR

Jefferson City, Sedalia, Pleasant Hill, Macon, Kansas City,
LEAVENWORTH, ST. JOSEPH & ATCHISON,

—Connecting at KANSAS CITY for—

LAWRENCE, TOPEKA, JUNCTION CITY, SALINA, SHERIDAN, &c.

CAIRO, MEMPHIS AND NEW ORLEANS LINE.

8:30 A. M. CAIRO MAIL, Sundays Excepted.
Arriving at Cairo 2:20 A. M., Memphis 12:40 P. M., Mobile 9:40 A. M.,
Vicksburg 9:30 A. M., New Orleans 11:10 A. M.

9:30 P. M. CAIRO EXPRESS, Except Saturdays.
Arriving at Cairo 3:15 P. M., Memphis 2:30 A. M., Vicksburg 5:00 P. M.,
New Orleans 1:30 A. M.

4:50 P. M. CHAMPAIGN PASSENGER,
Arriving at Champaign at 11:00 P. M.

THIS IS THE ONLY DIRECT ROUTE TO

Humboldt, Corinth, Grand Junction, Little Rock, Selma, Canton,
Grenada, Columbus, Meridian, Enterprise,

MEMPHIS, VICKSBURG, NEW ORLEANS & MOBILE.

At NEW ORLEANS, connections are made for

GALVESTON, INDIANOLA,
And all Parts of Texas.

NOTICE.—This Route is from 100 to 150 MILES SHORTER, and from
12 to 24 HOURS QUICKER than any other.

THIS IS ALSO THE ONLY DIRECT ROUTE TO

DECATUR, TERRE HAUTE, VINCENNES & EVANSVILLE.

Peoria and Keokuk Line.

8:30 A. M. KEOKUK PASSENGER, Sun. Excepted.
Arriving at Chenoa 3:15 P. M., El Paso 4:05 P. M., Peoria 5:40 P. M.,
Canton 7:14 P. M., Bushnell 8:59 P. M., Keokuk 11:36 P. M., Warsaw 12:05 A. M.

9:30 P. M. KEOKUK PASSENGER, On Saturdays,
This Train will leave at 4:50 P. M. Arriving at Chenoa 3:35 A. M.,
El Paso 4:25 A. M., Peoria 6:05 A. M., Canton 7:36 A. M., Bushnell 9:25 A. M., Keokuk
12:05 P. M., Warsaw 12:40 P. M.

THIS IS THE DIRECT ROUTE TO

PEORIA, CANTON, KEOKUK, CHATSWORTH, FAIRBURY,
CHENOA, EL PASO, BUSHNELL, HAMILTON, & WARSAW.

Connecting at PEORIA for

PEKIN, HAVANA, BATH AND VIRGINIA.

—CONNECTING AT KEOKUK FOR—

Ottumwa, Eddyville, Oskaloosa, Pella, Monroe, Des Moines.

Elegant Drawing Room Sleeping Cars

ATTACHED TO ALL NIGHT TRAINS.

SPACIOUS AND FINE SALOON CARS, with all Modern Improvements,
Run upon all Trains.

BAGGAGE CHECKED THROUGH TO ALL IMPORTANT POINTS.

For Through Tickets, Sleeping Car Berths, Baggage Checks, and information, apply at the office
of the Company in the Great Central Depot, foot of Lake St.

Hyde Park and Oakwoods Train.

HYDE PARK TRAIN... 6:30 A. M.	ARRIVE 7:45 A. M.	HYDE PARK TRAIN... 8:00 P. M.	ARRIVE 9:15 P. M.
HYDE PARK TRAIN... 8:05 A. M.	ARRIVE 9:15 A. M.	HYDE PARK TRAIN... 9:10 P. M.	ARRIVE 10:25 P. M.
HYDE PARK TRAIN... 12:40 P. M.	ARRIVE 1:40 P. M.		

* Sundays Excepted.

W. P. JOHNSON, Gen. Pass. Agent.

M. HUGHITT, Gen. Supt.

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SPEED! COMFORT! SAFETY!

MICHIGAN CENTRAL and GREAT WESTERN RAILWAYS!

The Great Central Route, via Niagara Falls, to

NEW YORK AND NEW ENGLAND.

Pullman's Magnificent Palace Drawing-Room Cars,

— FROM —

CHICAGO TO NEW YORK CITY, WITHOUT CHANGE.

4 PASSENGER TRAINS LEAVE CHICAGO, DAILY EXCEPT SUNDAY.

(DEPOT, FOOT OF LAKE STREET,) as follows:

5:00 A. M. MAIL TRAIN. Stops at all Stations.

(SUNDAYS EXCEPTED.)

Arrives DETROIT at 5:50 P. M.

11:00 A. M. SPECIAL NEW YORK & BOSTON EXP.

(SUNDAYS EXCEPTED.)

Arrives at Michigan City 1:13 P. M.; New Buffalo 1:32; Niles 2:13, [Dinner]; Kalamazoo 3:44 P. M.; Battle Creek 4:21; Marshall 4:43; Jackson 5:40; Detroit 7:35; London 11:15; Hamilton 3:30 A. M.; Toronto 9:30; Suspension Bridge 3:40; Rochester 6:50 A. M.; Albany, 2:40 P. M.; NEW YORK, 7:00; BOSTON, 11:50 P. M. This train connects at ROCHESTER (7:00 A. M.) with

Wagner's Magnificent Palace Drawing-Room Cars!

— RUNNING THROUGH TO NEW YORK, WITHOUT CHANGE! —

5:15 P. M. ATLANTIC EXPRESS.

(DAILY.)

Arrives at Michigan City, 7:13 P. M.; Niles 8:30 P. M. [Supper]; Kalamazoo, 10:35 P. M.; Jackson, 1:00 A. M.; Detroit 3:40; London, 8:35; [Break fast]; Hamilton 11:50; Suspension Bridge 1:30 P. M.; Rochester 3:10 P. M.; Albany, 1:50 A. M.; NEW YORK, 7:00 A. M.; BOSTON, 11:00 A. M. A MAGNIFICENT DRAWING-ROOM SLEEPING CAR is attached to this train daily, FROM CHICAGO TO NEW YORK CITY. The celebrated

Hotel Drawing-Room Car is also attached to this Train from Chicago to Rochester!

These, together with ELEGANT DAY CARS TO SUSPENSION BRIDGE, make this Train the favorite Train for all points East.

SPECIAL NOTICE.—Boston and New England Passengers will please notice that this Train now makes direct connection through. A SLEEPING CAR is attached at Rochester at 5:30 P. M., running through to Springfield, Mass., thus avoiding transfer at Albany. Breakfast at Springfield. This Train reaches Springfield early enough second morning to connect with all Trains up and down the Connecticut.

9:00 P. M. NIGHT EXPRESS.

(SAT. & SUN. EXCEPTED.)

Arrives at Michigan City, 11:03 P. M.; Niles, 12:25 A. M.; Kalamazoo, 2:00; Marshall, 2:19; Jackson, 4:25; Grand Trunk Junction, 7:00; Detroit, 7:30; London, 1:45 P. M.; Hamilton, 4:35; Toronto, 9:35; Niagara Falls, 6:15; Buffalo, 7:15 P. M.; Rochester, 9:10; Syracuse, 12:35 A. M.; Rome, 1:55; Utica, 2:35 Albany, 6:30 A. M.; NEW YORK, 10:00 A. M.; BOSTON, 3:40 P. M.

PULLMAN'S PALACE SLEEPING CARS ARE ATTACHED TO THIS TRAIN FROM CHICAGO TO DETROIT,

And from Suspension Bridge to New York.

WE INVITE THE ATTENTION OF THE TRAVELER to the SPLENDID EQUIPMENTS of this FIRST-CLASS LINE TO THE EAST!

FOR THROUGH TICKETS, and any and all information, Sleeping Car accommodations, &c., apply at General Office in Tremont House Block, at office in Great Central Depot; also at No. 60 Clark street, under Sherman House; at Grand Trunk Railway Office, 48 Clark street, or at New York Central Railroad Office, No. 53 Clark street, and at office under Briggs House.

H. E. SARGENT, Gen. Supt. M. C. R. R.

W. K. MUIR, Gen. Supt. Gt. Western R. W.

HENRY C. WENTWORTH, Gen. Pass. Agt.

CHICAGO, INDIANAPOLIS & LOUISVILLE

THROUGH LINE!

— VIA —

VIA MICHIGAN CENTRAL RAILROAD.

THE ONLY ROUTE TO

TO LOUISVILLE, WITHOUT CHANGE OF CARS.

TWO EXPRESS TRAINS Leave Chicago Depot, Foot of Lake as follows:

8:00 A. M. MORNING EXPRESS.

(EXCEPT SUNDAY.)

Arriving at LaFayette, 2:35 P. M.; Indianapolis, 6:00 P. M.; Louisville, 11:30 P. M.

4:00 P. M. AFTERNOON EXPRESS.

(EXCEPT SATURDAY)

Arriving at Michigan City 6:30 P. M. (Supper); LaFayette, 11:30 P. M.; Indianapolis, 2:15 A. M.; Louisville, 7:00 A. M.; Nashville, 4:00 P. M.

A GOOD SLEEPING CAR is Attached to this Train Every Night,

And goes from Chicago to Louisville WITHOUT CHANGE!

SPECIAL NOTICE.—This Train stops at Michigan City for Supper, and waits at that point for Michigan Central Atlantic Express East, leaving Chicago at 4:45 p. m. Passengers going South, and wishing as much time in Chicago as possible, can take the 4:45 p. m. Michigan Central Atlantic Express, and connect without fail at Michigan City, with above Through Louisville Express.

THE GREAT BRIDGE ACROSS THE OHIO at Louisville being completed, passengers are relieved of the omnibus transfer.

FOR THROUGH TICKETS, via this line, apply at offices of connecting lines and at all ticket offices in Chicago.

HENRY C. WENTWORTH, Gen. Pass. Agent.

Michigan Central R. R.

LOCAL CONNECTIONS:

Chicago & Michigan Lake Shore Railroad.

Open from New Buffalo to St. Joseph, Mich.

8:00 A. M. AND 4:00 P. M. Trains from Chicago Connect at New Buffalo.

Kalamazoo, Allegan & Grand Rapids R. R.

Open to Grand Rapids.

8:00 A. M. AND 9:00 P. M. Trains from Chicago Connect at Kalamazoo.

Peninsular Railroad of Michigan.

Open to Charlotte.

8:00 A. M. AND 9:00 P. M. Trains from Chicago Connect at Battle Creek.

Jackson, Lansing & Saginaw Railroad.

Open to Bay City, Mich. Passing through Lansing and Saginaw.

8:00 A. M. AND 9:00 P. M. Trains from Chicago Connect at Jackson.

GRAND TRUNK RAILWAY.

All Michigan Central Trains Connect at Grand Trunk Junction

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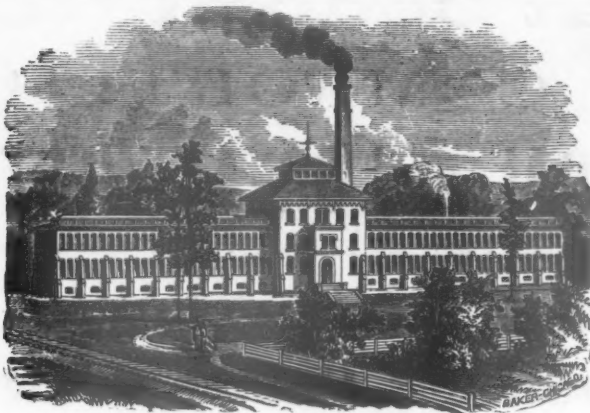
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PORTLAND, BOSTON, BUFFALO, OGDENSBURG

AND ALL POINTS EAST.

H. E. SARGENT, General Superintendent.

Elgin Watches!



Elgin Watches!



MANUFACTURED BY

THE NATIONAL WATCH COMP'Y.

OFFICE GEN'L SUP'T U. P. R. R. }
OMAHA, Neb., Dec. 16, 1869. }
HON. T. M. AVERY, President National Watch Co.,
Chicago, Ill.

Dear Sir—During the months that I have carried one of your B. W. Raymond Watches, it has not failed to keep the time with so much accuracy as to leave nothing to desire in this regard.

For accuracy in time keeping, beauty of movement and finish, your watches challenge my admiration and arouse my pride as an American, and I am confident that in all respects they will compete successfully in the markets of the world with similar manufactures of older nations. They need only to be known to be appreciated.

Yours most respectfully,
C. G. HAMMOND, Gen. Supt.

OFFICE OF GEN'L SUP'T H. R. R. }
NEW YORK, Jan. 17, 1870. }

M. AVERY, Esq., President National Watch Co.,

Dear Sir—The Watch made by your Company, which I have carried the past two months, has kept excellent time. I have carried it frequently on engines, and have been on the road with it almost daily. During this time it has run uniformly with our standard clock. Truly yours,

J. M. TOUBEY.

No Movements Retailed }
by the Company. }

PENNA R. R. Co., GEN. SUP'T. OFFICE }
ALTOONA, Jan. 19, 1870. }

T. M. AVERY, Esq., President National Watch Co.,

Dear Sir—This Company has purchased and put in the hands of its engine-men, eighty "Raymond movements," which have given excellent satisfaction and proved to be very reliable time-keepers. In addition to these, quite a number of Elgin Watches have been purchased by officers and employees of this Company, all of whom have been well pleased with the efficiency and regularity of the movements manufactured by the National Watch Company. Respectfully,

EDWARD H. WILLIAMS,
General Superintendent.

AMERICAN MERCHANTS' UNION EXPRESS CO. }
CHICAGO, Feb. 17, 1870. }

T. M. AVERY, Esq., President National Watch Co.,

Dear Sir—It gives me pleasure to state that the two or three Elgin Watches I have at different times purchased for presentation have given entire satisfaction, and are highly valued as elegant and correct time-keepers.

A very large number of your Watches are being carried by the Messengers in the employ of this Company, and are giving entire satisfaction, their time-keeping qualities being implicitly relied upon.

CHAS. FARGO.

MICHIGAN CENTRAL R. R. Co. }
CHICAGO, Jan. 13, 1870. }

T. M. AVERY, Esq., President National Watch Co.:

Dear Sir—I have now been carrying one of your Elgin Watches, of the B. W. Raymond pattern, for nearly five months, and it affords me much pleasure to testify in favor of its time-keeping qualities, in which, after this length of time, I have great confidence. It has from the first run very close to the standard time, the slight variation being uniform, and susceptible of correction by careful regulation. My experience thus far justifies the opinion that it is a very safe and reliable time-keeper.

Respectfully yours, H. E. SARGENT.

OFFICE OF THE GEN. SUP'T. C. & N. W. R. R. }
CHICAGO, Feb. 16, 1870. }

T. M. AVERY, Esq., President National Watch Co.:

Dear Sir—I have pleasure in expressing my opinion of the Elgin Watches, the more so since I do not think there is a better watch made. A large number of them are in use by our conductors and engineers, and other employees, and I have heard no dissenting opinion upon their merits. They run with a smoothness and uniformity fully equal to any other watch I know of, and justify all your claims of excellence in manufacture and fitting of parts.

Yours, truly,
GEO. L. DUNLAP, Gen'l Supt.

LAKE SHORE & MICHIGAN SOUTHERN R. R. }
CHICAGO, Jan. 27, 1870. }

T. M. AVERY, Esq., President National Watch Co.:

Dear Sir—I have carried the Elgin Watch long enough to be able to pronounce it a first-rate time-keeper. I am making a very careful test of its performance and will soon give you the results. I think it will show that the West can produce Watches equal to the manufacture of any part of the world.

Yours, truly,
E. B. PHILLIPS,
President L. S. & M. S. R. R. Co.

OFFICE GEN. SUP'T ERIE RAILWAY, }
NEW YORK, Feb. 7, 1870. }

T. M. AVERY, Esq., President National Watch Co.,

Dear Sir—Having for about three months tested, in various ways, the "time-keeping" qualities of one of your Elgin Watches, I most cheerfully award it the praise that it is due. For one month the Watch was carried by one of our Locomotive Engineers, and since by different persons, so that its full value as a time-keeper could be known under different modes of treatment. I will simply say that it has given perfect satisfaction, and in my opinion is as near perfection as I believe it possible a Watch can be made.

Respectfully yours, L. H. RUCKER,
General Superintendent.

Business Office and Salesroom of the National Watch Company, Nos. 159 and 161 Lake Street, Chicago.

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Rand, McNally & Co.,

(TRIBUNE JOB OFFICE.)

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WILLIAM COLDER, President.

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